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# International Journal of Management and Marketing Research

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# **TOTAL QUALITY MANAGEMENT: A MEDIATING FACTOR IN THE RELATIONSHIP BETWEEN CUSTOMER EXPECTATIONS AND SATISFACTION**

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## **ABSTRACT**

*Patient satisfaction is a useful metric for evaluating service quality in healthcare organizations. This study examined total quality management as a factor mediating the relationship between customer expectations and satisfaction. A self-administered questionnaire was distributed to inpatients undergoing treatment at a tertiary-level hospital in Vietnam during April 2018. A confirmatory factor analysis was performed using AMOS 25.0 (The Statistical Package for the Social Sciences version 25.0) software to determine the relationships among the latent variables of the proposed model. Customer expectations had a significant effect on total quality management and customer satisfaction, while total quality management had a positive influence on satisfaction. Thus, total quality management plays a mediating role in customer expectations and satisfaction. This study has significant implications for service organizations, indicating that patient expectations and service quality should be considered when aiming to increase customer satisfaction.*

**JEL:** I110, M310

**KEYWORDS:** Total Quality Management, Customer Expectations, Customer Satisfaction

## **INTRODUCTION**

In this paper, we investigate total quality management (TQM) as a mediating factor between patient expectations and satisfaction. The study focuses on the key factors that should be considered when aiming to improve the quality of services offered by service organizations, including process, interaction, and environmental quality. Customer satisfaction functions as a useful tool for measuring the quality of service provided by healthcare organizations (Jamaluddin and Ruswanti, 2017). Therefore, to increase customer satisfaction, service organizations should endeavor to improve the quality of the services that they provide. Service quality contributes to customer satisfaction, and thus the establishment of loyalty (Mosahab, Mahamad and Ramayah, 2010).

The concept of TQM was developed between 1970 and 1993, and initially went by several different names—including inspection quality control (IQC), statistical process control (SPC), total quality control (TQC), and company-wide quality control (CWQC)—before being finally established as TQM in the 1980s (Juran, Godfrey, Hoogstoel and Schilling, 1998, and Aized, 2012). Several programs have been developed to measure TQM in the service industry, including Six Sigma (Aized, 2012) and Reengineering (Aized, 2012), as well as standards including ISO 9000 (Juran et al., 1998, and Aized, 2012, and ISO 9000, 2015), ISO 9001 (ISO 9001, 2015), and ISO 10001 (ISO 10001, 2007). These standards have assisted service organizations and industries worldwide in improving their management quality, and numerous companies have implemented TQM with the aim of developing and improving their businesses (Salter, 1993). Most of the literature on TQM focuses on organizational implementation details.

In the context of the service industry, TQM evolved over several phases focusing variously on product quality, product process quality, service quality, service process quality, business planning, strategic quality planning, and integrated strategic quality planning (Juran et al., 1998, and ISO 9000, 2015, and ISO 9001, 2015). During these stages, TQM was improved by focusing on customer satisfaction (ISO 10001, 2007), which is a useful indicator of whether the service quality of service organizations meets their customers' expectations (Kotler and Keller, 2016). Researchers have shown that measurements and evaluations of satisfaction levels may also serve as metrics for a provider's service quality (Lee and Kim, 2017, and Joung, Kim, Yuan and Huffman, 2011, and Pekkaya, Imamoglu and Koca, 2017). Perceived service quality and customer expectation are antecedent factors for customer satisfaction (Almsalam, 2014).

The healthcare sector is part of the service industry, and customers demand high-quality services (Graffigna Barello, Riva and Bosio, 2014, and Consuela-Madalina, Lorin and Iuliana- Raluca, 2018, and Spiridon, Gheorghe and Purcarea, 2018). The service process in this sector focuses on the interaction between patients and healthcare staff (Spath, 2009), and any misjudgment or error on the part of healthcare staff can have fatal consequences for the patient. In the US, 98,000 people die annually as a result of medical errors (Kohn, Corrigan and Donaldson, 1999). Similarly, medical errors have been identified as the leading cause of death in US healthcare institutions, prompting researchers to suggest that a major shift towards healthcare quality is necessary (Oyebode, 2013). Thus, measurement of service quality is increasingly considered a critical factor in service organizations (Lee and Kim, 2017, and Agyapong, Afi and Kwateng, 2018, and Mosahab et al., 2010). Patient satisfaction is a useful tool for measuring the quality of service provided by service organizations (Pekkaya et al., 2017 and Cho, Lee, Kim, Lee and Choi, 2004). Most of the published literature focuses on perceived quality and satisfaction with services, while our study considers the impact of customer expectations and satisfaction on TQM by service organizations.

Our study examines an integrated model in which TQM plays a mediating role between patient expectation and patient satisfaction. In our model, TQM is a combination of three factors: process, interaction, and environmental quality. Patient expectation factors include aspects of service quality such as tangibility, reliability, and responsiveness. Patient satisfaction measures service quality. These factors significantly contribute to our understanding of the elements of service quality that influence customer satisfaction.

The remainder of the paper is organized as follows: in the next section, we present the related literature and outline the scope of this study. We then describe our data and methodology and discuss the findings. In the final section, we make our concluding comments.

## LITERATURE REVIEW

Total quality management (TQM) is best considered as a management system for customer-focused organizations that engages all employees in a process of continual improvement (ISO 9001, 2015). The key aspects of service quality include tangibility, reliability, responsiveness, assurance, and empathy. Tangibility refers to a sense of physical space in relation to services, facilities, equipment, personnel, and communication. Reliability denotes the organization's ability to deliver a safe and reliable service. Responsiveness constitutes employees' willingness to cooperate with and assist the client. Empathy manifests in employees' ability to understand the client's mood and feelings. Assurance denotes the ability of a company to instill a sense of competence and confidence in their clients (Khanli, Daneshmandi and Choobineh, 2014, and Zarei, Arab, Froushani, Rashidian and Tabatabaei, 2012). These aspects of service focus on customer satisfaction with products and services (ISO 9000, 2015). Customer satisfaction can be improved by meeting customers' expectations regarding various aspects of service (Khanli et al., 2014). Thus, service organizations should improve the quality of their services to increase customer satisfaction (Lei and Jolibert, 2012). Researchers have determined five key factors, i.e., process quality, interaction quality, environmental quality, cost, trust, and overall satisfaction (Zarei, Daneshkohan, Khabiri and Arab, 2015a, and Zarei, Daneshkohan, Pouragha, Marzban and Arab, 2015b).

In Vietnam, the majority of public hospitals provide treatment to patients who hold health insurance cards and so are not obliged to pay for their own healthcare, with the exception of a small number of diagnoses and treatments that require specialized technology. Most public hospitals have inadequate medical equipment and outdated facilities, and consequently their process, interaction, and environmental quality fall short of professional standards. Additionally, overcrowding in hospitals often results in unreliable and unsafe diagnostic and treatment practices. We selected three factors—process, interaction, and environmental quality—as appropriate indicators of research hospital quality in Vietnam, based on a sample size of about 500 participants and in accordance with the factor loading of the model.

Expectations are often related to satisfaction (Marimon, Gil-Domenech and Bastida, 2019), and there is a clear relationship between perceived service quality and expectations of service quality (Nadi et al., 2016, and Khanli et al., 2014, and Marimon et al., 2019). When the perceived service quality falls below the expected level, consumers are disappointed (Kotler and Keller, 2016). Improvement of the service quality thus contributes significantly to the fulfillment of expectations and customer satisfaction (Marimon et al., 2019). Wezel, Bos and Prahl (2015) demonstrated that customer satisfaction can predict customer expectations of care outcomes. Perceived service quality depends on how well a consumer's expectations match their actual experience (Khanli et al., 2014, and Aghamolaei et al., 2014). Previous research has identified five dimensions of service quality—tangibility, reliability, responsiveness, assurance, and empathy—that have a bearing on patient expectation (Khanli et al., 2014, and Aghamolaei et al., 2014, and Zarei et al., 2012).

As discussed above, the research target in this study was public hospitals in Vietnam. Vietnam's public hospitals show relatively poor tangibility, in terms of the physical space in which services are delivered, as well as poor facilities, equipment, personnel proficiency, and communication. Moreover, with regard to responsiveness, employees' willingness to cooperate with and assist patients is often hindered by insufficient skills, and their ability to reliably deliver quality service is poor. We included three factors associated with expectation—tangibility, reliability, and responsiveness—in our model, based on the sample size and factor loading.

In the healthcare industry, patient satisfaction is an important metric by which healthcare services are selected, and service quality should meet customer expectations. In addition, customer satisfaction is a useful metric for measuring the quality of healthcare organizations (Marimon et al., 2019). Customers evaluate their satisfaction with an organization by comparing their actual experience with their expectations. Nadi et al. (2016) observed a gap between customer expectations and the perceived quality of the service actually received, where customers' expectations often exceed their actual experience (Khanli et al., 2014). The perceived quality of the service has been shown to be correlated with satisfaction and loyalty (Lei and Jolibert, 2012), and customer satisfaction leads to positive word-of-mouth communication (Kitapci, Akdogan and Dortyol, 2014). Astuti and Nagase (2014) proved that customer satisfaction is a mediator role between relationship marketing and loyalty.

Service quality management teams are under increasing pressure to ensure that services are customer-focused and of the highest possible quality (Juran et al., 1998). Studies measuring service quality from the user's perspective revealed that customer expectations exceed their actual experience with respect to all aspects of service quality (Khanli et al., 2014, and Al Fraihi and Latif, 2016). In other words, a gap is consistently seen between customer expectations and the actual quality of the service delivered, such that customer expectations regarding quality of healthcare are often unmet (Rezaei, Hajizadeh, Zandian, Fathi and Nouri, 2018, and Dopeykar et al., 2018). However, just as expectations and perceptions are constantly evolving, so too are the measures taken to improve service quality, where expectations drive changes in the quality standards set for products and services. Against this background, the following hypothesis is proposed:

*H1: Patient expectation has a positive effect on total quality management.*

Prudencio and Mamede (2018) demonstrated that expectations are based on personal beliefs about the nature and quality of the service sought. Satisfaction corresponds to service quality and whether the customer's expectations are met. Positive word-of-mouth communication and the client's intention to continue using a service organization are the main indicators of customer satisfaction (Kitapci et al., 2014, and Gu, Yang, Li, Jain and Liang, 2018). There are significant correlations among customer expectations, perceived service quality, customer satisfaction, positive word-of-mouth communication, and loyalty (Gu et al., 2018, and Pevec and Pismanik, 2018). Against this background, the following hypothesis is proposed:

*H2: Patient expectation has a positive influence on patient satisfaction.*

In the healthcare industry, customer satisfaction is a key metric of service quality and value (Farley et al., 2014). Patient satisfaction is based on the patient's perceptions of the quality of care delivered by the healthcare organization (ISO 10001, 2007). Studies have shown that aspects of total quality management may affect perceived service quality, including process, interaction, and environmental quality, as well as cost and trust. These factors are showing continual improvements, leading to increased customer satisfaction (Zarei et al., 2015a, and Zarei et al., 2015b). Service quality can be improved according to an evaluation process wherein customers compare their expectations with their perceptions of the quality of the service actually received (Khanli et al., 2014). Against this background, the third hypothesis of this study is as follows:

*H3: Total quality management has a positive influence on patient satisfaction.*

## **DATA AND METHODOLOGY**

Prior to the data collection, staff members were recruited as research assistants, to collect the data. The staff were trained for one day on how to collect the data, the purpose of the study, how each item of the questionnaire avoids biasing the respondents, and confirmation of completeness. After consent had been obtained from the participants, who signed participant information sheets and consent forms, data were collected by a self-administered questionnaire. After participants had completed the questionnaire, the research assistants confirmed that everything had been completed as required.

This study was conducted in April 2018. The target population consisted of inpatients at a tertiary-level hospital in Hanoi, Vietnam. The sample size required for this study (N = 500) was determined based on the recommendations of Wolf et al. (2013). On average, 2,500 inpatients per day utilize 39 clinical departments specializing in cancer treatment at this hospital. Participants were selected from inpatient lists compiled by each department using a simple random sampling method; approximately 20% of all inpatients were recruited. The study included inpatients aged >18 years who were treated in April 2018. In total, 550 participants were recruited to this study to account for incomplete questionnaires, which were compiled as a separate data set.

The data were gathered via a self-administered questionnaire that comprised two main parts. The first part concerned sociodemographic factors and included questions regarding age, sex, marital status, educational level, occupation, and method of paying hospital fees. The second part included 29 questions related to total quality management (TQM), patient expectation (PE), and patient satisfaction (PS), with answers given on a Likert scale that ranged from 1 to 5. The TQM factor was evaluated by 12 items, including 4 items on process quality (TQM1–TQM4), 5 pertaining to interaction quality (TQM5–TQM9), and 3 concerning environment quality (TQM10–TQM12). These items were devised based on the SERVPERF questionnaire developed by Zarei et al. (2015a) and Zarei et al. (2015b), and modified for compatibility with the research hospital context. The PE factor was evaluated via 14 items, including 5 items on tangibility (PE13–PE17),

5 on reliability (PE18–PE22), and 4 on responsiveness (PE23–PE26). Finally, the PS factor was evaluated via three items (PS27–PS29).

Data analysis was performed to generate descriptive statistics on sociodemographic characteristics (frequencies and percentages) using the Statistical Package for the Social Sciences (SPSS) version 25.0. The data were analyzed via a two-step approach involving a measurement model and a structural model. The measurement model shows the underlying structure of the latent variables in a theoretical model. The structural model shows the causal and correlational links among latent variables in a theoretical model. Confirmatory factor analysis (CFA) was performed along with structural equation modeling (SEM) to test the validity of the model using the AMOS 25.0 program (SPSS Inc.).

## RESULTS

A Likert scale ranging from strongly agree (5) to strongly disagree (1) was used to capture the responses to all the study items. Cronbach's alpha coefficients were calculated to assess the construct reliability and validity of the questionnaire using SPSS (ver. 25.0). Construct reliability describes the degree to which a set of indicators consistently and stably reflect a given construct.

The Cronbach's alpha value of the total quality management (TQM) factor was between 0.823 and 0.896, that of patient expectation (PE) was between 0.939 and 0.955, and that of patient satisfaction (PS) was 0.792 (Table 1). The alpha coefficients for all latent variables exceeded the cut-off reliability value of 0.70, showing the reliability and adequate internal consistency of the questionnaire. Of the 29 original items, 27 were retained, with two omitted to ensure sufficient reliability of the instrument.

Table 1: Reliability Statistics

Constructs	Items	Cronbach's Alpha
Total Quality Management (TQM)		
Process quality	4	0.896
Interaction quality	5	0.890
Environment quality	3	0.823
Patient Expectation (PE)		
Tangibility	5	0.942
Reliability	3	0.955
Responsiveness	4	0.939
Patient Satisfaction (PS)	3	0.792

*This table shows the alpha coefficients, which exceeded the reliability threshold of 0.70, confirming the reliability and adequate internal consistency of the scales.*

Confirmatory factor analysis (CFA) can be used to evaluate the fit of an SEM model (Hair Jr, Black, Babin and Anderson, 2014). Each variable was analyzed based on CFA to assess the construction and correct assignment of variables. Our study's model was assessed in terms of standardized regression weights, modification indices, and standardized residuals for pairs of items (Hair Jr et al., 2014). The results are presented in Table 2.

In Table 2, the standardized coefficients of all items ranged from 0.63 to 0.93, thus exceeding the required threshold of 0.5. The average variance extracted (AVE) values were between 0.63 and 0.75, thus exceeding the cut-off of 0.50, and thereby indicating that a large proportion of the variance was explained by our constructs. The AVE exceeded the squared correlations between any pair of constructs, suggesting high

discriminant validity (Hair Jr et al., 2014). The composite reliability (CR) values for all constructs were between 0.79 and 0.97, thus exceeding the cut-off value of 0.70 required for adequate internal consistency. The overall model fit was therefore satisfactory, and all scales met the reliability and validity requirements.

Table 2: Confirmatory Factor Analysis Results

Construct Measures	Standardized Coefficients	Average Variance Extracted (AVE)	Composite Reliability (CR)
Total Quality Management (TQM)		0.631	0.911
TQM1<---TQM	0.849		
TQM2<---TQM	0.777		
TQM3<---TQM	0.801		
TQM4<---TQM	0.848		
TQM5<---TQM	0.839		
TQM11<---TQM	0.632		
Patient Expectation (PE)		0.753	0.965
PE16<---PE	0.753		
PE17<---PE	0.786		
PE20<---PE	0.880		
PE21<---PE	0.911		
PE22<---PE	0.928		
PE23<---PE	0.871		
PE24<---PE	0.886		
PE25<---PE	0.885		
PE26<---PE	0.892		
Patient Satisfaction (PS)		0.646	0.785
PS27<---PS	0.798		
PS28<---PS	0.809		

The CFA results used to evaluate the fit of the SEM model. The model was assessed in terms of standardized regression weights, modification indices, and standardized residuals for pairs of items. The standardized coefficients were required to exceed a threshold of 0.5. The CR values thus met the cut-off value of 0.70 for adequate internal consistency. The AVE values evaluated in terms of the cut-off of 0.50.

Goodness-of-fit measures of the model were assessed based on indexes including goodness-of-fit (GFI), normalized fit index [NFI], root means squared error of approximation (RMSEA), comparative fit index [CFI], and Tucker-Lewis index [TLI], (Hair Jr et al., 2014). In addition, the ratio of  $\chi^2$  to the degrees of freedom (Chi-square/df) value was supporting the validity of the model. The  $\chi^2$  test is known to be sensitive to sample size, and several widely used goodness-of-fit (GFI) indices demonstrated that the confirmatory factor model. The fit indices of the research model are presented in Table 3.

Table 3: Goodness-of-fit Measures of the Model

Goodness-of-fit	Index	Value	Range	Accepted
Absolute fit	Chi-square	295.904		
	DF	112		
	Chi-square/DF	2.642	Less than 5	Accepted
	GFI	0.938	>0.90	Accepted
	RMSEA	0.056	0.05- 0.08	Accepted
	RMR	0.020	Close to zero	Accepted
Incremental fit	NFI	0.964	>0.90	Accepted
	TLI	0.973	>0.90	Accepted
	CFI	0.977	>0.90	Accepted
Parsimony fit	AGFI	0.915	>0.90	Accepted

Goodness-of-fit of the model. The  $\chi^2$  test is known to be sensitive to sample size, and several widely used goodness-of-fit indices were used: GFI [cut-off = 0.85], normalized fit index (NFI) [requirement = value of 0–1], root mean squared error of approximation (RMSEA) [requirement = value from 0.05–0.08], comparative fit index [CFI] and Tucker-Lewis index [TLI] [cut-off = 0.9].

As in Table 3, the Chi-square/df value was 2.642. The indexes had the following values: [GFI] = 0.938 (cut-off = 0.85), [NFI] = 0.964 (requirement = value of 0–1), [RMSEA] = 0.056 (requirement = value of 0.05–0.08), [CFI] = 0.977, and [TLI] = 0.973 (cut-off = 0.9) (Hair Jr et al., 2014). Thus, the research model was considered to be suitable for application in practice.

The hypotheses of this study were assessed based on the path coefficient with standardized coefficients in terms of the statistical significance (requirement = value less than 0.05) of the impacting factors. The standardized coefficients indicate the direction of the effect. The hypotheses of this study are listed in Table 4.

Table 4: Hypothesis Test Results

Hypothesis	Path	Standardized Coefficients	Sig.	Results
H1	PE---> TQM	0.409	***	Accepted
H2	PE---> PS	0.130	0.004	Accepted
H3	TQM---> PS	0.635	***	Accepted

Table shows hypothesis test results. Hypotheses were evaluated by standardized coefficients and path coefficients with significance (sig.) less than 0.05. Symbol \*\*\* represents (sig. = 0.001). Acronyms are total quality management (TQM), patient expectation (PE), and patient satisfaction (PS).

Hypothesis H1: Patient expectation (PE) has a positive effect on total quality management (TQM). The path coefficient (PE--->TQM) for H1 was statistically significant (0.409;  $p = 0.001$ ) (Table 4). This result shows that PE had a positive effect on TQM. Thus, the hypothesis was accepted.

The items in the questionnaire concerning PE related to the following aspects of service: tangibility (5 items; PE13–PE17), reliability (5 items; PE18–PE22), and responsiveness (4 items; PE23–PE26). Our results revealed that PE had a significant influence on TQM ( $p < 0.05$ ). It is clear that improving TQM will in turn improve PE, which corroborates the findings of previous studies. Similarly, Javed and Ilyas (2018) observed that customer expectations were strongly related to service quality, in terms of empathy and responsiveness in particular. Meanwhile, other studies reported a gap between customer expectations and their perceptions of the actual quality of the service received (Dopeykar et al., 2018, and Rezaei et al., 2018).

Hypothesis H2: Patient expectation (PE) has a positive influence on patient satisfaction (PS). The path coefficient (PE--->PS) for H2 was statistically significant (0.130;  $p = 0.004$ ) (Table 4), confirming that PE has a positive influence on PS. Thus, the hypothesis was accepted.

Our findings indicate that PE has a clear association with PS. Indubitably, healthcare firms can improve TQM, and thus maintain user satisfaction, by improving their management of client expectations. Customer expectations of service quality constitute a key factor in customer satisfaction. Previous studies found that client expectations regarding various aspects of service quality significantly influence their satisfaction (Javed and Ilyas, 2018). Customer expectations have a considerable effect on client satisfaction, which can lead to positive word-of-mouth communication and increased repurchase intentions (Gu et al., 2018, and Kitapci et al., 2014). Moreover, other studies indicated that customer expectations mediate the relationship between perceived quality and satisfaction (Marimon et al., 2019). These findings indicate that managers can improve service quality, and thereby ensure client satisfaction and loyalty, by reference to customer expectations.

Hypothesis H3: Total quality management (TQM) has a positive impact on patient satisfaction (PS). The path coefficient (TQM---> PS) for H3 was statistically significant (0.635;  $p = 0.001$ ) (Table 4). This result indicates that TQM has a significant effect on PS. Thus, the hypothesis was accepted.

Three aspects of service quality—process quality, interaction quality, and environment quality—were assessed in terms of customer satisfaction. The results indicated a significant relationship between TQM and PS ( $p < 0.05$ ). Previous studies have similarly reported that service quality influences customer satisfaction considerably (Eivazzadeh, Berglund, Larsson, Fiedler and Anderberg, 2018, and Hsieh, Tsai, Chih and Lin, 2015, and Gu et al., 2018). Moreover, customer expectations may be used as a measure of the service quality of service organizations (Gu et al., 2018). Additionally, repurchase intention has been found to be affected by user satisfaction with services (Kitapci et al., 2014), while service quality itself may also affect the decision to repurchase independent of client satisfaction (Hsieh et al., 2015).

## CONCLUDING COMMENTS

The purpose of this study was to examine whether total quality management (TQM) plays a mediating role in the relationship between customer expectations and satisfaction. The study was based on a self-administered questionnaire carried out at a tertiary-level hospital in Vietnam in April 2018, with 550 respondents. Of these, 516 respondents returned the questionnaire, and the results were analyzed statistically. The reliability of the variables was checked for internal consistency. We then performed a confirmatory factor analysis (CFA) to confirm the dimensionality and convergent and discriminant validity of the model, and used structural equation modeling (SEM) to test the validity of the proposed model and our hypotheses. Based on our findings, all hypotheses were supported. Customer expectations have a significant effect on TQM and customer satisfaction; TQM has a positive influence on satisfaction; and TQM is a mediating factor in the relationship between customer expectations and satisfaction. Our study revealed that customer expectations and service quality should be considered when attempting to increase customer satisfaction. Indubitably, our research contributes novel data that will be beneficial to the health service industry. The study identified the key factors that should be considered when aiming to improve the quality of the services offered by service organizations, including process, interaction, and environmental quality. Healthcare organizations should focus on managing customer expectations to increase and maintain customer satisfaction.

This study had the following limitations. It only focused on inpatients, so the views of outpatients were not measured. A further study to holistically assess healthcare service quality could provide insights into the experiences of both outpatients and inpatients. The study was conducted in selected public hospitals. Although some characteristics are shared by both public and private hospitals, we could not discriminate the unique features of the two types of entities based on this study. The research focused on two variables (customer expectation and service quality) and their effect on customer satisfaction. However, the study did not investigate the relationship between customer satisfaction and repurchase intention. Additional research could explore the relationship between these two constructs. In future research, it may be useful to investigate these factors in private service organizations. Despite the goodness of fit of the model, we must retest the model on different sample sizes to validate the current findings and provide new insights into this relationship.

**APPENDIX**

Questionnaire: Total quality management: A mediating factor in customer expectations and customer satisfaction. Your responses will be used solely for research purposes. The information that you provide will help to improve the quality of healthcare services.

Serial No: .....

Date of completion.....

Please write your response in the blank column or mark the box provided.

1. What is your age? .....years

2. What is your sex?

- |         |                          |           |                          |
|---------|--------------------------|-----------|--------------------------|
| 1. Male | <input type="checkbox"/> | 2. Female | <input type="checkbox"/> |
|---------|--------------------------|-----------|--------------------------|

3. What is your marital status?

- |             |                          |            |                          |
|-------------|--------------------------|------------|--------------------------|
| 1. Single   | <input type="checkbox"/> | 2. Married | <input type="checkbox"/> |
| 3. Divorced | <input type="checkbox"/> | 4. Widowed | <input type="checkbox"/> |

4. What is your educational level?

- |                      |                          |                        |                          |
|----------------------|--------------------------|------------------------|--------------------------|
| 1. No schooling      | <input type="checkbox"/> | 2. Primary school      | <input type="checkbox"/> |
| 3. Secondary school  | <input type="checkbox"/> | 4. High school         | <input type="checkbox"/> |
| 5. Bachelor's degree | <input type="checkbox"/> | 6. Postgraduate degree | <input type="checkbox"/> |

5. What is your occupation?

- |                   |                          |                       |                          |
|-------------------|--------------------------|-----------------------|--------------------------|
| 1. Govt. employee | <input type="checkbox"/> | 2. Non-govt. employee | <input type="checkbox"/> |
| 3. Unemployed     | <input type="checkbox"/> | 4. Agriculture        | <input type="checkbox"/> |
| 5. General labor  | <input type="checkbox"/> | 6. Retired            | <input type="checkbox"/> |

6. Method of paying hospital fees

- |              |                          |                     |                          |
|--------------|--------------------------|---------------------|--------------------------|
| 1. Insurance | <input type="checkbox"/> | 2. Personal payment | <input type="checkbox"/> |
|--------------|--------------------------|---------------------|--------------------------|

Please place a cross in the box corresponding to the level of your agreement/disagreement with each of the following statement: 1. Very strongly disagree, 2. Strongly disagree, 3. Agree, 4. Strongly agree, 5. Very strongly agree

**Total Quality Management (TQM)**

Statement/Item	1	2	3	4	5
<b>Process Quality</b>					
TQM1 Services were provided on time					
TQM2 I was informed when the services would be delivered					
TQM3 Staff were available when needed					
TQM4 Medical and non-medical services were provided promptly					
<b>Interaction Quality</b>					
TQM5 Round-the-clock services were available					
TQM6 Staff were polite and friendly					
TQM7 Staff had my best interests at heart					
TQM8 Staff understood my specific needs					
TQM9 Staff seemed knowledgeable when answering my questions					
<b>Environment Quality</b>					
TQM10 Hospital environment was clean and comfortable					
TQM11 Employees were well dressed and neatly presented					
TQM12 Equipment was up-to-date					

Patient Expectation (PE)

Statement/Item	1	2	3	4	5
<b>Tangibility</b>					
PE13 I expect the hospital to have a convenient location					
PE14 I expect directions to be clear					
PE15 I expect the wards to be well-designed for easy access and comfort					
PE16 I expect staff to be professional					
PE17 I expect free medicine to be available					
<b>Reliability</b>					
PE18 I expect the admission process to be fast and straightforward					
PE19 I expect staff to respond immediately when called					
PE20 I expect staff to show sincere interest when attending to my problems					
PE21 I expect staff to be reliable in handling my problems					
PE22 I expect the hospital to provide error-free treatment					
<b>Responsiveness</b>					
PE23 I expect admissions staff to be friendly and courteous					
PE24 I expect staff to respond promptly to patient requests					
PE25 I expect to be provided with adequate information about my health condition					
PE26 I expect affordable medicine to be prescribed					

Patient Satisfaction (PS)

Statement/Item	1	2	3	4	5
PS27 I am satisfied with the results of my treatment					
PS28 The quality of service I received met my expectations					
PS29 I am satisfied with my selection of this hospital to provide me with healthcare					

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## BIOGRAPHY

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# **FACTORS AFFECTING EMPLOYEE JOB SATISFACTION OF A MAJOR MIDDLE EASTERN AIRLINE**

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## **ABSTRACT**

*Employees' job satisfaction plays an important role in strengthening their relations with an organization. This phenomenon carries more significance in the aviation industry due to the involvement of heavy investment and high competition. The present study aims to identify critical factors that affect the satisfaction level of employees' at major Middle Eastern airports. Data were collected from 406 respondents with the help of a questionnaire comprised of thirty questions, divided into seven major categories. Respondents were responsible for providing ground services to passengers at the airport. A Likert type scale was used to evaluate answers varying from strongly agree to strongly disagree. Validity and reliability tests were applied to ensure the suitability of data and authenticity of responses. Data were analyzed with the help of independent sample T-tests, ANOVA and Regression analysis. Results of the study are beneficial for leadership of the aviation industry, who can use these factors to develop improvement strategies. These strategies will not only enhance the satisfaction level of their employees, but also improve the productivity and profitability of their respective organizations.*

**JEL:** J28, M52, N35, N75

**KEYWORDS:** Job Satisfaction, Aviation Industry, Critical Factors

## **INTRODUCTION**

**J**ob satisfaction shows the contentment level of a person from his/her job. Organizations face challenges due to the dynamic business environment of the 21<sup>st</sup> century and employees' job satisfaction is one of them. It not only affects the motivation level of employees but also serves as a major driving force behind their performance (Bakker, Tims, & Derks, 2012). The phenomenon of job satisfaction depends upon physical, psychological and environmental factors that employees' face in their workplaces. However, most business organizations pay little attention to improving their work environment, which adversely affects the performance of their employees. On the other hand, successful organizations understand the importance of employees' satisfaction and its impact on their performance.

The phenomenon of work engagement has more significance in the airlines industry due to the enormous diversity of customers on many (Ilkhanizadeh & Karatepe, 2017). Under these circumstances, employees' satisfaction gains are more importance due to its direct relevance on customer dealing and customer satisfaction. This study measures the satisfaction level of employees' working in a major Middle Eastern Airlines (MEA) and identifies factors affecting their satisfaction level. For some time, airline management has observed a sharp decline of around 10% in the satisfaction level of its customers. This decline could reduce their market share and profitability. As evident from previous studies, the importance of customer satisfaction increased due to additional availability of low-cost carriers coupled with higher customer expectations. Preliminary surveys were conducted by Middle Eastern Airports (MEA) to identify reasons

behind customers' dissatisfaction. Customers expressed major dissatisfaction from experiences prior to boarding their flight.

Based on these earlier survey results, the ground services staff (GSS) including 406 people were selected for the study. They are the first major contact point with passengers before boarding. The objective was to explore the satisfaction level of employees. Results of the study can add to the existing body of literature regarding factors which can produce dissatisfaction among customers of the airline industry. The remaining sections of the article are organized into brief literature review, which is followed by data collection. Then, analysis is conducted, and the results are discussed. Finally, summarized findings of the study are presented in the conclusion section that are followed by a list of references at the end.

## **LITERATURE REVIEW**

Aviation industry jobs have always been demanding and stressful due to the involvement of substantial workload and diversified customers. Providing services to a broad range of customers from different socio-economic and multi-cultural backgrounds requires motivational involvement of their employees. Therefore, any slackness on behalf of employees during this process can result in dissatisfied customers (Cheng-Hua & Hsin-Li, 2012). Under these circumstances, organizations face an uphill task to create an environment, where employees feel satisfied and perform their work with dedication and commitment. Employee performance is directly linked with organizational performance, thus, it creates a challenge for commercial airlines to reduce the turnover intentions of its employees (Karatepe & Vatankhah, 2014). The aviation industry faces tremendous pressures due to rising expectations of customers coupled with decreasing costs of low-cost carriers (An & Noh, 2011). This phenomenon gains more significance at airports, where ground staff handles a number of tasks starting from passenger check-in to their final boarding. Any slackness during this process can lead to dissatisfaction among customers (Cheng-Hua & Hsin-Li, 2012). On the other hand, their creative performance and emotional competence helps them in dealing with both rude and troublesome passengers (Lages & Piercy, 2012).

Any direct linkage between airport staff and airline customers emphasizes the psychological and behavioral aspects of employees more than objective and cognitive aspects (Lee, An, & Noh, 2012). However, employees' give more importance to factors like organizational culture, workplace values, fairness of policies, decentralization of authority and available opportunities for their future growth (Liang & Hsieh, 2005). They feel more satisfied when organizations attach employee interests with their own interests and create a win-win concept for both (Nahar, Islam, & Ullah, 2017). Numerous researches address the issue of employees' job satisfaction in aviation industry. However, most are context specific and more applicable for the situations in which they are done. This study identifies crucial factors related to airlines employee job satisfaction in the Middle East.

## **DATA AND METHODOLOGY**

The present study examines the role of factors that critically affect the satisfaction level of employees in a major Middle Eastern Airport (MEA). Data were collected from the staff of ground services, who were the first major point of contact with passengers. In total, there were 3,317 employees of Ground Services Staff (GSS), who were primarily responsible for ground operations in three major airports of the country. Out of them, 406 employees were randomly selected as a sample of the population with 95% confidence interval. These respondents were selected from four major airports of the country as: A (128), B (128), C (85), D (50).

An online survey form was used for the purpose of data collection to provide respondents the flexibility of both time and place. This was beneficial as most were working in shifts making it impossible to administer the forms in one combined sitting. However, survey questions were explained in detail by two surveyors to

their respective team leaders for authenticity of responses. Furthermore, validity and reliability tests were applied to ensure the credibility of data.

Results of the tests were found to be 0.947 and 0.973, respectively, while the response rate of the survey was 100 % due to the involvement of team supervisors who reminded their staff members to complete the survey. Collected data were analyzed with the help of independent sample T-test and ANOVA. A total of thirty questions were asked which were divided into seven broad categories. These questions were designed based on a literature review and preliminary surveys from the local stakeholders to identify related job factors. A Likert type scale was used to elicit replies from respondents. The scale varies from strongly agree to strongly disagree. The first part of the survey consisted of demographic factors followed by thirty questions divided into seven main categories. These major categories of the surveyed results are as follows: 1. Job Satisfaction, 2.) Compensation & Benefits, 3.) Work Environment, 4.) Management Style, 5.) Work Colleagues, 6.) Job Stability, and 7.) Learning & Development

## RESULTS AND DISCUSSION

Reliability tests were conducted to determine reliability and consistency of the data. Table 1 indicates the data is reliable and can be used for further analysis. High values in reliability and validity columns gives credence to the authenticity of responses. It shows that all questions are understood in the same manner by respondents and variation in the responses is original. Also, it depicts that the collected data is credible and fulfills the purpose for which it is collected.

Table 1: Reliability and Validity Test Results

Section	Description	No. of Questions	Reliability	Validity
1	Job Satisfaction	5	0.883	0.94
2	Compensations & Benefits	7	0.839	0.916
3	Work Environment	6	0.806	0.898
4	Management Style	4	0.878	0.937
5	Work Colleagues	2	0.74	0.86
6	Job Stability	2	0.892	0.945
7	Learning & Development	4	0.82	0.906
Total		30	0.947	0.973

*Table 1 indicates the reliability and validity of data. Results shows the data is reliable and can be used for further analysis.*

Table 2 shows the age distribution of respondents. The largest demographic ranges between 30-39 years with 154 respondents. The lowest number of respondents occurred for the 50-59 years age group. Employees with moderate levels of job experience constitute the largest respondent group followed by employees between 40-49 years of age. Similarly, employees with the minimum amount of job experience comprised 16.7% of the surveyed population. Out of the total sample population, 112 were managers, while 294 worked on non-managerial positions.

Table 2: Frequencies by Age

Age	Frequency	Percent %
20-29	68	16.7
30-39	154	37.9***
40-49	118	29.1
50-59	66	16.3
Total	406	100

Table 2 shows the frequencies of these respondents according to their age groups. Maximum number of population ranges between 30-39 years (\*\*), while minimum number ranges from 50-59 years.

Table 3 shows the categorization of employees based on their educational qualifications. Respondents with high school qualifications constitute 39.4% of the sample, while respondents with Bachelor qualification comprises of 39.2%. Employees, who did not finish high school were 4.4% of the sample. Individuals with qualifications higher than the bachelor level make up 17 % of the population and mostly occupy managerial positions. Results | shows that most respondents are qualified enough to understand the theme of questions and give their responses in the best possible manner. In addition, their qualifications also reflect their suitable candidacy to serve customers in a satisfied manner.

Table 3: Frequencies by Educational Qualifications

Educational Qualification	Frequency	Percent %
Below High School	18	4.4*
High School	160	39.4
Bachelor	159	39.2
Above Bachelor	69	17
Total	406	100

Table 3 indicates the categorization of employees based on their educational qualifications. Most respondents had high school or above qualifications, while only 4.4% did not finish high school (\*).

Table 4 shows the general satisfaction level of employees in seven broad categories. Respondents show the highest level of agreement in sections 1, 5 & 6, which corresponds to job satisfaction, working with colleagues and job stability. Similarly, they have average level of agreement in 2, 3 & 4 that are related with compensation, work environment and management style, respectively. However, they expressed disagreement in category 7, which is learning and development.

Table 4: Trend Identification for Survey Sections

Section	Weighted Average	Trend
1	3.44***	Agree
2	3**	Average
3	3.01**	Average
4	3.16**	Average
5	3.82***	Agree
6	3.59***	Agree
7	2.5*	Disagree
General Trend	3.22	Average

Table 4 shows the general satisfaction level of employees in seven broad categories. They expressed disagreement in category 7(\*), average agreement in category 3,4 & 5 (\*\*), and maximum agreement in category 1,5 & 6 (\*\*\*).

This finding indicates that employees are neither satisfied with their learning opportunities nor are they are happy with their career development plans. This phenomenon not only hampers their future promotion and growth, but also cultivates dissatisfaction and lack of motivation among them. On the other hand, they did not express strong agreement in any category, further showing their lack of satisfaction. Finally, an independent sample t-test was conducted to identify difference in responses between managers and employees.

Table 5 shows a value of 0.289, which is not significant implying the null hypothesis is not rejected. The hypothesis was established on the premise that there is no significant difference in the satisfaction level of managers and employees. The result indicates that both tiers of employees expressed the same level of dissatisfaction despite their different job levels. Even though the surveyed airports operate in different regional zones, the responses are generally the same. Similarly, there exists a significant difference between job positions and job responsibilities between managers and workers. However, the null hypothesis was not rejected highlighting the need to investigate this factor. To accomplish this task, we conduct ANOVA to verify difference in responses due to demographic factors, such as airport, age and educational qualification.

Table 5: Independent Sample t-Test

Independent-Sample t-test	Sig	Evidence Level
General Trend for Employees Satisfaction	0.289	There is no evidence of change

*This table shows the value of 0.289, which is greater than 0.05. This implies that the null hypothesis is true and there is no significant difference in the satisfaction level of managers and employees*

Table 6 shows the impact of age, airport and education on the satisfaction level of employees. The values of age and airport are 0.023 and 0.000 respectively, which are less than 0.05. This implies the null hypothesis is valid that age and airport does not cause any variation in the satisfaction level of employees. However, the value for the education factor is 0.06, which is greater than 0.05. It shows the satisfaction level of employees varies with variations in educational level of employees. People with higher levels of education respond differently relative to employees with lower level of education. However, this variation is not observed among the same respondents based on their age and airports.

Table 6: ANOVA Test for Age, Airport and Education Factors

ANOVA Test	Sig	Evidence Level
Age	0.023***	No evidence of change
Airport	0.000***	No evidence of change
Education	0.060	Evidence of change

*This table shows that age and airport does not cause variation in the satisfaction level of employees as both values are less than 0.05 (\*\*\*). However, the value for education factor is 0.06, which is greater than 0.05 shows that satisfaction level varies with the variation in educational level of employees.*

Equation 1 shows the regression analysis of respondent's overall satisfaction in relation with seven broad categories of questionnaire. The p-value of 0.02 indicates the null hypothesis is rejected that there is impact of the seven parameters on the satisfaction level of workers. Similarly, an R-Square of 90% indicates that variations in these predictor variables significantly create variation in the response variable.

$$\text{Satisfaction} = 37.80 + 3.333 (\text{Compensation}) + 3.519 (\text{Work Environment}) + 1.296 (\text{Age}) + 2.242 (\text{Education}) + 1.326 (\text{Airport}) + 0.556 (\text{Management Style}) + 1.143 (\text{Work Colleagues}) + 4.815 (\text{Job Stability}) + 7.593 (\text{Learning and Development}) \quad (1)$$

The regression equation depicts the positive impact of these factors on the overall satisfaction level of GSS. Age, education, airport and work colleagues have a smaller impact on satisfaction relative to compensation, work environment and job stability. However, learning and development enjoys the highest impact on the satisfaction level of employees. Results of the regression compliment the earlier findings in which employees expressed dissatisfaction from their learning and development (L&D) opportunities. These findings clearly indicate that L&D plays a major role in the satisfaction level of employees and any dissatisfaction may lead to lack of motivation and other stresses among workers. Table 7 shows the results of the companion regression in which each independent variable is run separately against the dependent variable. Interestingly, both age and education were negatively related to satisfaction during their individual results, however, their relationship became positive in the combined regression model. This finding indicates that satisfaction level decreases with an increase in age and education respectively, but when these two factors are combined with other factors, the relationship is changed.

The impact of L&D was significant in both single and combined results, indicating the importance of this variable on the overall satisfaction level of employees. The table further shows the significant values of for job stability and learning variables indicating that these two variables are responsible for maximum variation in the response variable of satisfaction. In the last column, p-values indicate that compensation, work environment and L& D are the most significant variable in terms of their relationship with the dependent variable. Similarly, the last row indicates that overall, the model is responsible for predict 90% of the variation in the response variable with p-value of  $0.024 < 0.05$  indicates that the regression model is statistically significant in predicting the changes of employee satisfaction.

Table 7: Regression Results of the Individual and Combined Predictor Variables

S. No	Predictor Variable	df	Regression Co-efficient		R <sup>2</sup> (%)	R <sup>2</sup> (Adj) (%)	p-value
			Single Result	Combined Result			
1.	Compensation	1	2.54	3.33	9.82	6.28	0.003**
2.	Work environment	1	1.69*	3.519	13.7	10.9	0.128
3.	Age	1	-0.55***	1.296	11.8	7.65	0.002**
4.	Education	1	-3.78***	2.24	15.2	12.7	0.001***
5.	Airport	1	0.85	1.326	4.32	3.31	0.252
6.	Management style	1	2.67**	0.556	10.59	6.58	0.185
7.	Work colleagues	1	2.85*	1.143	5.35	3.49	0.016*
8.	Job stability	1	3.59	4.815	21.28	17.19	0.002**
9.	Learning & Development	1	3.16***	7.593	28.25	24.62	0.001***
10.	All	09	-	-	90.12	82.56	0.024*

*This table shows the negative relation of age and education with job satisfaction in single results, but their effect becomes positive, when they are combined with other factors. However, the impact of L&D is significant in both single and combined results. P-values for compensation (0.003\*\*\*), Age (0.002\*\*), L&D (0.001\*\*\*) and Job stability (0.002\*\*) indicates their significance with job satisfaction. Finally, the last row indicates that overall, the model predicts 90 % of the variation in response variable with p-value (0.024\*).*

## CONCLUDING COMMENTS

The changing dynamics of the airline industry and increasing customer expectations create pressures for managements to maintain profitability. In this regard, customer satisfaction plays an important role for both retention of old customers and marketing to new customers. The present research was also carried out to

identify the reasons behind customer dissatisfaction, which could hamper the profitability of major Middle Eastern Airlines (MEA). Based on the premise that customer satisfaction is closely integrated with employee satisfaction, a preliminary survey revealed that customers expressed their major dissatisfaction regard to events before the boarding process. GSS were mainly responsible for handling customers during this phase of their travel experience.

Data were collected from 406 respondents of the Ground Services Staff (GSS) with the help of a questionnaire comprised of 30 questions. Respondents were randomly selected from four major airports of the country named A, B, C and D. Reliability tests were conducted to verify the authenticity of the collected data. Later, independent sample T test and ANOVA were used for the analysis purpose. Results indicated that the overall satisfaction level of employees from their organization was neither bad nor excellent. However, employees expressed major dissatisfaction in the category of learning and development. This finding indicates that employees felt unsatisfied with training and development programs of the organization. Perceived development support from the organization not only enhances satisfaction levels but also reduces turnover intentions (Shehawy, Elbaz, & Agag, 2018). No disparity was observed based on job levels. Both, middle managers and senior management expressed average satisfaction level from their jobs. Similarly, differences in age levels and postings at different airports did not result in any variation in satisfaction levels. However, educational differences led to variation in satisfaction levels.

Employee satisfaction could be enhanced by providing additional opportunities to improve their skills and career development. In this regard, seminars and workshops can be arranged to enhance the skills and capabilities of employees. Simultaneously, their educational level can be upgraded by offering them different short-term courses. Educational qualifications are found to impact their job satisfaction levels. Also, employment security, financial benefits and career growth plans can be amended to enhance their satisfaction level. These factors play a crucial role in improving job satisfaction levels of employees (Supriyanto, 2018). Leadership in the aviation industry can use these factors to develop improve strategies, which not only enhances the satisfaction level of their employees, but also improves the productivity and profitability of their respective organizations.

Managers can benefit from the findings of this research by focusing on the training and development needs of their workers. Findings here indicate that unclear career path and lack of professional development opportunities acts as a major contributor in creating dissatisfaction among workers. It can further lead to de-motivation and negatively impact their dealing with airline passengers. Despite in-depth analysis of factors bringing dissatisfaction among employees of GSS, the present research faces the limitation of access to the top management of the airlines. Although, they were supportive in conducting this research, their point of view could not be evaluated due to their busy work schedules. Future researchers can continue this research by incorporating top management as another respondent to give more credibility and authenticity to the findings.

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# **A TWO-LEVEL EVALUATION OF MOBILE TRAVEL WEBSITES USING THE VISITOR EXPERIENCE AND THE BRAND PRESENTATION**

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## **ABSTRACT**

*With global mobile phone usage at an all-time high, people are traveling and making travel plans on their wireless devices while on the go. This research looks at how travel websites present their offerings on smartphones. It considers the promotion and, more specifically, the branding of the travel industry leaders from a consumer's mobile phone. The authors explored how the travel websites present and promote on mobile devices and the difference between these travel offerings when viewed on mobile websites. This study considered that shopping for airfare and hotel rooms was within a few clicks on anyone's mobile phone today. The researchers considered the best practices and recommendations for mobile users and the top ten companies providing this experience. The researchers reviewed Expedia Group and Booking Holdings (formerly Priceline) families of travel brands, as well as other top brands' mobile websites. The websites were evaluated using criteria from a recent rubric of digital marketing in a service industry. The presentation of the brands on these mobile websites was then evaluated using a custom set of criteria to rate their achievement in this area. In both areas of the criteria, the Expedia family of brands was rated the highest.*

**JEL:** M31

**KEYWORDS:** Branding, Websites, Mobile, Marketing, Travel Marketing

## **INTRODUCTION**

**Y**ears ago, the neighborhood travel agent was the service provider who knew his/her customer and could find airline flights and book travel for a percentage of the fee. That model has mostly gone away because of global business trends, such as disintermediation (i.e., removing the middleman) and the adoption of the Internet and mobile phones (Werthner & Ricci, 2004; Webb, 2016; Wang & Cheung, 2004). Closing neighborhood travel agencies has been a constant trend for decades. The airlines cut out the percentage of revenue incentive and then revised again to a flat fee for booking a customer's travel and, finally, paid nothing. So, agents stopped booking. There are still a few personal service travel agencies that have fees for their services, but they are uncommon. For example, Thomas Cook Travel, founded in the UK in 1841, closed abruptly in 2019, leaving 150,000 people on vacation stranded. The 2020 coronavirus scare has raised serious questions about how trustworthy travel agencies are when travelers experience fear of illness.

This exploratory research considers how travel agencies present their brands via mobile devices. Changes in how travel is booked, as well as the marketing of these services, have become important for business leaders in tourism. Managing the dollars or revenue management has evolved into a transformed environment in forecasting, pricing, and online travel agency inventory allocations because purchasing behavior has become much more of a last-minute choice of travelers instead of planning ahead (Webb,

2016). The research questions addressed are: 1) How do the travel websites present on mobile devices? and 2) What is different about these businesses viewed on mobile websites?

## LITERATURE REVIEW

### Travel Agencies Migrate to Mobile Delivery of Services

The top two travel companies globally are Expedia Group and Booking Holdings, each with about \$88 B in revenues in an industry that does \$368 B annually in sales. The business trends for travel agencies is a more scalable self-service model, just as service firms, like banking and insurance industries are doing. The factors that influence this move include external competitive pressure, a culture of innovation, and available resources. CEO risk-taking and the size of the firm also have had an impact on making the transition to e-business activity (Wang & Cheung, 2004) One of the trends found was the focus on sales over the longer-term marketing activities. A study in Turkey looked at independent travel agencies, rather than the larger brands of Expedia and Booking Holdings, which were focused on using mobile phones to reach customers directly and to increase sales, rather than on improving their brand. They did not report that the agencies were seeking to enhance their delivery of services to customers, merely increase revenue. They were thinking shorter-term paybacks instead of loyalty and repeat business (Selvi, 2014). Another trend involves downloading and using apps on the phone. A study looked at the receptivity of customers who used mobile apps to make hospitality purchases. This two-step study was completed with a university student population that had demonstrated a propensity to use mobile devices to make purchases. They found that there was a range of willingness to download apps, and for those who did download the travel application, there was also a range of willingness to use them. There was a correlation among customers who enjoy using smartphones and are confident in themselves. They were found to be more likely to download the travel apps and then use them. Those who were confident in themselves and trusting in the technology to deliver results were most inclined to use mobile devices successfully (Kwon, Bae & Blum, 2013).

### Cutting Edge Tourism Experiences on Mobile Devices

On the horizon for travel agencies are the new mobile-delivered augmented reality tools, which are like virtual travel guides with highly engaged interactivity. Some of these virtual offerings include three dimensional experiences, a higher level of personalized services, and even the anticipation of what the needs may be in the future. For example, agencies can take their future airline passengers on virtual airline flights. This capacity is already available. Samsung phones can click into a virtual reality travel experience, for example, a visit to the San Diego Zoo to see the animals. Most customers are using mobile devices for the basics, like ordering food and seeking accommodations and transportation, but there is a segment of the travel audience who wants more, including context-aware services that may include trip planning (Goh, Ang, Lee, & Lee, 2010). There is much published research on mobile tourism apps and tourists' needs and behaviors. There are comparatively fewer studies on types of services they desire. Tourists favored basic services that provide information about transportation, housing, and eating. Some, but not many, more experienced tourists, were looking more often at context-aware services and trip planning. These were found to be less needed compared to the basics for most travelers (Goh, Ang, Lee & Lee, 2010).

### Transforming Shopping Behavior for Services

Consumer behavior and, specifically, shopping behavior on the Internet, has been of interest to academics and industry from the start. Shopping for travel or shopping for educational services are alike in that both are service industries and intangible. Similar research studies considered branding for internet experiences in the k-12 education field through marketing on mobile websites. The websites that were most effective were those with elements of good user experience, navigation, and clear purpose (McCabe & Weaver, 2018a). Both when and how people book their travel has changed (Webb, 2016). The Internet has made

everyone a travel agent who can make their own reservations online. Yang & Forney (2013) considered how technology anxiety affects mobile shopping behavior. The mobile shopping assistant has emerged from the phone, enabling anyone to purchase products and services at their fingertips. Because of the personal nature of the phone, there is a legal requirement for security and privacy. More personal and interactive communications are now available, compared to the traditional channels of TV, radio, and print, which have led to some consumer anxiety. Social influences, such as technology anxiety, reveal why some customers use mobile shopping and others choose not to. Yang (2010) considered what determines the adoption of mobile e-commerce services, such as travel, and how to design these for the best user experience. The study revealed that certain factors of social influence, such as entertainment choices drove behavior change. Travel for pleasure is not the same as travel for work. The business traveler has a task to complete, not just a visit as a tourist. Some travel planning adjustments are needed for booking this type of travel, and it begins with the mobile experience. The success of the mobile travel booking depends on task-technology fit, practicality, and financial criteria (Liang & Wei, 2004). Werther and Ricci (2004) considered the travel industry to be a service provider, with a new usage for travel, more than just booking a trip, in which people are creating their individual experiences. Businesses are seeing mass customization and flexible configurations, down to the individual level. One cruise company allows people to create their own custom cruises (Werthner & Ricci, 2004). Clearly, consumers are driving the travel industry toward a simple model where they are making more independent decisions instead of relying on the tour operators.

### Mobile Devices for Booking Travel

The Internet, via Online Travel Agencies (OTA), has dominated travel and tourism planning on mobile devices. This is across all customer segments and especially found among frequent users of social media. There are two segments or different groups for marketers to consider as best customers. The first group uses traditional online tools, such as websites to book travel online on the desktop computer. A second group adopts new channels of information and purchases their travel through more advanced and emerging tools, such as the mobile phone (Xiang, Magnini & Fesenmaier, 2015). When looking at customer loyalty and booking utilizing mobile hotel booking technology, the research found that personalization, privacy, trust, and risk perceptions were most important. Trust was relative to risk and associated with loyalty. Booking a room on a mobile device was important to online travel agencies, hotel operators and technology vendors alike (Ozturk, Nusair, Okumus & Singh, 2017). Fun and games can guide a user to book a trip. This can lead users to book their next travel with the brand bringing the fun in the form of a game or guide (Aluri, 2017).

### Distinguishing a Brand on a Mobile Website

Brands allow companies to be different. Differentiated brands may use unique messaging, distinguishing graphics, different optimization, and display on mobile screens. Brand identity includes font, color, image, symbols, shape, and the unique product benefits (Zaichkowsky, 2010). For the mobile user, optimizing what the computer displays is important. Not all brands are using mobile experiences for all the brands' capability. A customer now follows the brand through the purchase journey, including on social media (Edelman, 2010). Social media is most likely accessed via a mobile device. Mobile marketing is the use of communications using a mobile phone, communicating the brand value (Leppäniemi, Sinisalo, & Karjaluoto, 2006). Millennials, born between 1981 and 1996, are different from Baby Boomers (1946-1960) or Gen Xers (1961-1980), with expectations of faster responses to queries and they are more comfortable using digital technology (Eastman, Iyer, Liao-Troth et al, 2014). Because of the differences, marketers are being careful about their brand distinction. Those in marketing study today's users' expectations, since they drive future revenues. Marketers need to know how people behave using mobile phones. Mobile websites must display information in a way that is fast, interesting, and affordable for the consumer. Businesses are differentiating their brands to target travel markets. Usually, business travelers go with what the company recommends for the hotel choice, but some use search engines or online travel

agents. Leisure travelers follow recommendations of friends and colleagues. Their next choices are travel websites, search engines, and OTA. After they gather information, they book on the website, with an OTA, or by using TripAdvisor (Verma, Stock & McCarthy, 2012). Destinations can be branded with corporate videos effectively. Through social media, two-way conversations with customers about these destinations provide both identity and brand image (Lim, Chung & Weaver, 2012).

Customers who are going places are seeking a simple and smoother brand experience that is engaging and encouraging, but not overwhelming. Now travel agencies are not so relevant. Triptik, for years the AAA strip-map staple for car travel, is no longer as relevant because it is not so personal or individualized. AAA can't customize like Google can on Google Maps. Maps are now being changed by citizen creators in a world of volunteer geographers (Goodchild, 2007). Automation has taken away the customer service side of route planning. Lee, Guillet, and Law (2013) looked at the relationship between online travel agents and hotels. This case study on Expedia found that the OTA are more like a business partner or vendor than just a level in the supply chain. There are some troubled relationships that have existed between OTA and the hotel management over the years. The hotels have not had the same perspectives on technology as the travel agents, who are still working on improving their communications through better distribution channels. Hotel brand loyalty is a factor for mobile websites. Trust-risk framework is related to brand loyalty (Chen, 2006). A breach of travel agency data will reduce the trust, increase the risk, and limit the loyalty. It's convenient for a customer to have a credit card on file through a smartphone with OTA, such as Expedia. Trust significantly influences perceived risk and, therefore, loyalty. Privacy paradox occurs when the customer chooses a high level of privacy but, when it comes to convenience, they overlook that concern and opt for the easy payment option with the credit card on file. Thus, privacy is not at the high level that they intended originally (Norberg, Horne, & Horne, 2007).

Worldwide Ranking of Travel Agencies

The *Travel Weekly* Top 40 Travel Agencies ranked the largest travel agencies in the world. Table 1 presents, by company, their revenues and percentage of top 25 sales from 2017.

Table 1: Top 25 Travel Companies, Revenues, Percentage of top 25 Sales (Travel Weekly, 2018)

		2017 Sales	% of Top 25 Sales	
1	Expedia Group	88	27%	www.Expedia Group.com
2	Booking Holdings	81.6	25%	www.bookingholdings.com
3	Am Exp Global	32.7	10%	www.amexglobalbusinesstravel.com
4	BCD Travel	25.7	8%	www.bcdtravel.com
5	Carlson-Wagonlit	23.2	7%	www.carlsonwagonlit.com
6	Flight Centre	16	5%	www.fctgl.com
7	HRG (est.)	16	5%	www.hrgworld.com
8	Travel Leader	7.08	2%	www.travelleadersgroup.com
9	Am Exp Travel	5.79	2%	www.travel.americanexpress.com
10	Direct Travel	4.7	1%	www.dt.com
11	Corporate Travel Mgt.	4.45	1%	www.travelctm.com
12	Fareportal	4.32	1%	www.fareportal.com
13	AAA	3.94	1%	www.aaa.com
14	Travel & Transport	3.2	1%	www.travelandtransport.com
15	Frosch	2.05	1%	www.frosch.com
16	Omega	1.41	0%	www.omegatravel.com
17	JTB Americas Group	1.37	0%	www.jtbamericas.com
18	World Travel	1.26	0%	www.worldtravelinc.com
19	World Travel Holding	1.24	0%	www.worldtravelholdings.com
20	Ovation Travel Group	1.16	0%	www.ovationtravel.com
21	ATG	0.86	0%	www.atgtravel.com
22	International Cruise	0.81	0%	www.iccenterprises.com
23	Adelman	0.68	0%	www.adelmantravel.com
24	Christopherson	0.61	0%	www.cbtravel.com
25	Travel Edge	0.61	0%	www.traveledge.com
		328.74		

Table 1 is a summary of the revenues of the leading travel agencies as reported in July of 2018. (Travel Weekly, 2018)

## METHODOLOGY

The exploratory research questions were as follows: 1) How do the top travel websites present on mobile devices? and 2) What is different about these brands when viewed on mobile devices rather than desktop computers? Using the brands of the most recent travel revenues found in *Travel Weekly* (2018), the two researchers evaluated the mobile websites from this “Power Report,” which is a global trend sheet of revenues, where Expedia Group brands are ranked first and Booking Holdings is ranked a close second. The authors focused on consumer-oriented websites and eliminated business-to business sites. The two authors considered the mobile experience based on the criteria (See Table 2) of: effectiveness, navigation, learnability, open access and satisfaction (McCabe & Weaver, 2018b; Aziz & Kamlundun, 2014). Table 2 presents the criteria used for judging the mobile websites. They are criteria used by the two authors on February 4, 2019, from four to one, four being best as a customer experience.

Table 2: Criteria for Judging the Mobile Website Experience

	4	3	2	1
<b>Effectiveness</b>	Found all information sought	Found most information sought	Found some information sought	Cannot find information sought
<b>Navigation</b>	Quickly see links on landing page to information sought	Must explore multiple pages to find information sought	Must use site search tool to find information sought	Cannot find information sought
<b>Learnability</b>	Site intuitively obvious to first-time visitor	Navigation is productive after some trial-and-error	Navigation is challenging but can be learned	Navigation is a barrier to learning how to navigate site
<b>Open access</b>	Has access rights to all information sought	Has access rights to some information sought	Must join organization or pay fee for information sought	Cannot gain access unless a part of target group
<b>Satisfaction</b>	Visit exceeds expectations	Visit meets expectations	Visit short of expectations	Visit fails in addressing expectations

Table 2 presents the criteria used when judging the experience of visiting the mobile websites. The scale is 1 is low and 4 is high value.

The criteria for judging branding was determined using a similar four-level scale, and the factors of important, distinctive, superior, and communicable were adapted from the Brand Resonance Pyramid (Kotler & Keller, 2016). The authors then developed sub-categories for the criteria, with descriptors for each level. The two authors evaluated the brand experience and scored the results on February 12-13, 2019. The authors then reviewed their findings with this study reflecting the summary of their qualitative judgements. The methodology was selected due to the exploratory nature of the research, as well as the expectation that this research could be enhanced with further statistical studies. The second area (Table 3) to be explored is how well OTA websites presented their brand. New criteria were developed to enable this evaluation.

Table 3: Criteria for Judging Branding

	4	3	2	1
<b>Important</b>				
Benefits from search	Information on landing page	Information within two clicks	Information within four clicks – path not obvious	Could not find information sought
Cutting edge	All three indicators of cutting edge*	Two indicators of cutting edge*	One indicator of cutting edge*	No indicators of cutting edge*
<b>Distinctive</b>	Significantly more of expected than competitors	More of what was expected than competitors	Less of what was expected than competitors	Significantly less of expected than competitors
<b>Superior</b>				
Access to desired benefit	Easy to access desired content	Somewhat easy to access desired content	Somewhat difficult to access desired content	Difficult to access desired content
Loading speed	Much faster than expected	Faster than expected	Slower than expected	Much slower than expected
<b>Communicable</b>				
Clarity	Immediate clarity of match	Some clarity of match	Eventual clarity of match	No clarity of match
Design elements/ video	Visual elements are effective – use video	Visual elements are somewhat effective, some use of video	Visual elements are less effective, marginal video	Visual elements are not effective, no video
Design elements/ still images	Visual elements are effective – use still images	Visual elements are somewhat effective, some use of still images	Visual elements are less effective, marginal use of still images	Visual elements are not effective, no still images
Text	Text is complementary with other elements	Text is somewhat complementary with other elements	Communicates primarily through text	Communicates entirely using text

\* Cutting edge criteria indicators were 1) options for air & hotel, 2) voice input, 3) handicapped accessibility, 4) language options, 5) pricing, and 6) watch lists Table 3 presents the criteria used when judging the branding of the mobile websites. The scale is 1 is low and 4 is high value.

## RESULTS

The criteria for judging the mobile websites were effectiveness, navigation, learnability, open access, and satisfaction. Table 1 describes the details for these judgements. The criteria for judging the branding was important, distinctive, superior, and communicable. Table 3 describes the details for these judgements. These findings are not statistically significant, because the data is qualitative; however, there are some relationships that can be reported based on the data and findings. For example, if a company’s data reports all 4’s (high value), and another shows all 2’s, this was viewed as an important conclusion. Specific differences are discussed below.

### Mobile Website Display Evaluation

Expedia was superior, revealing 4’s in nearly every category for mobile display, with significant advantages over Booking Holding. Booking Holdings scored lower in effectiveness for the following reason: the information sought was not easily available. For example, the Booking Holdings’ Priceline mobile website delivered a popup banner to a different destination than was requested. Instead of a trip to Las Vegas, it offered the user a sale-priced cruise to the Caribbean. Navigation on Booking Holdings sites often brought the authors to a different site than what was expected. Booking Holdings delivered less on satisfaction, with one 4, one 3, and four 2’s as the scores for the brands, while Expedia Group received five 4’s, three 3’s, and zero 2’s. The worst performer was Flight Centre Travel Group, selling flights in the US, as an Australian Booking Holdings agent. Access to travel information was limited, and prices were higher. Evaluations were for mostly 2’s, except for two 4’s in open access. The airlines named, not the pricing, was the order in which the user viewed results. No filters were available. There was low satisfaction overall. For example, the cost was \$500 to travel from San Diego to Denver, when the other airlines priced the same trip at \$200. A similar experience occurred reviewing pricing from San Diego to Vegas.

The second-best scoring group for mobile website display overall was not Booking Holdings, but Fareportal, because they consistently had a faster and more intuitive display on mobile. So, although Booking Holdings had the second highest revenues overall, Fareportal, with CheapOair and One Travel mobile experiences scored all 4's. Travel Consolidation sites were part of the experience, too. For example, Kayak: airfare and hotel (Booking Holdings), Trivago: hotel only (Expedia Group), and Momondo were consolidation sites. For example, the experience on the mobile website sends users to a different site (www.justfly.com) to book the travel, instead of helping them directly. Table 4 displays the evaluation of the user experience on a mobile device.

Table 4: Mobile Marketing Display Evaluation

	Effectiveness	Ease of Navigation	Learnability	Open Access	Satisfaction
<b>Expedia Group, Inc.</b>					
Expedia	4	4	4	4	4
Hotels	4	4	4	4	4
Hotwire	4	3	4	3	3
Cheaptickets	4	3	4	3	3
Trivago	4	4	4	4	4
Travelocity	4	4	4	4	4
Orbitz	4	4	4	4	3
HomeAway	4	4	4	4	4
<b>Booking Holdings, Inc.</b>					
Priceline	3	3	4	4	2
Booking	2	3	4	4	2
Agoda	2	4	4	4	3
Kayak	4	4	4	4	4
Cheapflights	2	3	2	4	2
Momondo	2	3	3	4	2
<b>Flight Centre Travel Group</b>					
Aunt Betty	2	2	2	4	2
Byo Jet	2	2	2	4	2
<b>American Express Travel</b>	3	4	4	4	3
<b>Fareportal</b>					
CheapOair	4	4	4	4	4
One Travel	4	4	4	4	4
<b>AAA Travel</b>	3	3	3	3	3

Table 4 presents the results of applying the Criteria for Judging the Mobile Website Experience. The scale is 1 is low and 4 is high value.

### Branding Findings

When it was important to be at the first page for travel and destination results, the research team found 4's under number of clicks in most Expedia Group brands. That shows that they are using best practices and have standardized these actions across many brands. They have a consistent impression across most of their family of brands. Booking Holdings was 4's for Kayak and Momondo, and three 3's, plus one 2.

*Cutting Edge:* The indicators here were 1) options for air & hotel, 2) voice input, 3) handicapped accessibility, 4) language options, 5) pricing, and 6) watch lists. Booking Holdings has a few more "cutting edge" indicators for branding than Expedia Group has shown. Perhaps Booking Holdings as #2, is looking

for a competitive advantage by trying harder at some new ways to be relevant. The incentive is there to steal some market share. Booking Holdings may be higher risk with some cutting-edge options, but they are doing it in a way that shows future progress. The smaller brands in Fareportal have some cutting-edge experience, too. These each score 3's.

*Distinctive:* Branding is a concern for these websites because many of these websites have the same engine running the platform in the background, therefore looking at the user experience is critical. For Expedia Group, the parent page has the best score. The others scored 2's and 3's. Booking Holdings, Momondo, and Agoda scored a 4, while the others were 3's or less. The Kayak and Cheapflights did not have distinctive offerings, with a 1 rating. CheapOair also had a 4 rating.

*Superior Access:* Cheap Flights did not score well; especially with all of the popup ads, they scored mostly 2's.

*Communicable Clarity:* Most of the mobile websites scored high in the clarity category. All but one Expedia Group brand was a 4. All but one of the Booking Holdings brands was a 4. Flight Center, American Express, and Fareportal were all 3's, which indicated a clarity of match for the brand and the way that they were viewed by the research team.

*Design Elements: Video, Image, Text:* The findings are most conclusive in this final section. The one area this research can offer suggestions for improvement is video.

During this research study, no travel brands were using video on their mobile websites, which was a surprise, especially because video is critical to gaining and keeping attention. The webpages scored 4's and 3's on text, with Booking Holdings slightly higher than Expedia Group. For example, Expedia website uses white text on a black background, which is good text quality. Hotels.com uses mostly grey on a greyer or off-white background. This site used mixed case text instead of all capital letters. They used the same font for most of the text, which is good for the reader's eyes. Hotwire uses grey on white. Still images are mostly stock photos of hotels. The images and video left much to be improved, with scores of 1's and 2's for many brands. Travel firms should consider the use of video, not just the traditional destination selling, to add value before, during and even after the purchase. They would enhance their brands with short videos about how to navigate the website, what the airport looks like, how to create a plan of travel, how to get to the car rental or public transportation after you book your flight, and other options for travel. Once the ticket is purchased, the sites can offer a bit extra value after purchase. On AAA Travel, text is layered directly over images that make it harder to read. Black print over a gray textured background layer (which looks like the color of gray cement) does not complement the content as much as users would like to see. The font is crisp, but the words are not easy to read with this distracting image. All text that the user needs to do something is in Capital letters, for example, BROWSE, LOG IN, SEE DEALS, BOOK A TRIP, LEARN MORE, SEE MORE, SEE REPORT, SEE GUIDE, SEARCH, JOIN AAA. The authors findings for this section indicate that there is room for brand improvement with video, images and text quality based on this evaluation. Table 5 presents the evaluation of the branding assessment for the Online Travel Agencies on mobile devices.

Table 5: Branding Assessment Evaluation

	Important		Distinctive	Superior		Clarity	Communicable		
	First Page/ # of Clicks	Cutting Edge	Offering	Access	Speed		Design/ Video	Design/ Still	Text
Expedia Group, Inc.									
Expedia	4	3	4	4	4	4	1	2	4
Hotels.com	4	2	2	4	4	4	1	2	3
Hotwire.com	4	2	2	4	4	4	1	2	2
Cheaptickets	4	2	2	4	4	4	1	2	3
Trivago	3	2	3	3	4	4	1	3	3
Travelocity	4	2	2	4	4	4	1	2	3
Orbitz	4	2	2	3	3	4	1	2	3
HomeAway	4	2	3	3	3	3	1	3	3
Booking Holdings, Inc.									
Priceline	3	3	3	4	3	4	1	2	4
Booking Holdings	3	3	3	4	3	4	1	2	4
Agoda	3	3	4	3	4	4	1	2	4
Kayak	4	3	1	4	4	4	1	2	4
Cheapflights	2	2	1	2	2	2	1	2	4
Momondo	4	3	4	4	4	4	1	2	4
Flight Centre Travel Group									
Aunt Betty	2	1	2	4	3	3	1	1	3
BYO Jet	2	1	1	4	3	3	1	2	3
American Express Travel	4	1	2	1	1	3	1	2	3
Fareportal									
CheapOair	4	3	4	4	4	3	1	2	3
One Travel	4	3	2	4	4	3	1	2	3
AAA Travel	2	2	2	3	3	3	1	2	3

Table 5 presents the results of applying the Criteria for Judging the Branding reflected in the mobile websites. The scale is 1 is low and 4 is high value.

## DISCUSSION

The future of cutting edge could be something like a ‘Pokémon Go’ mobile augmented reality game with human engagement. For example, if Expedia Group uses something fun, people may go to the website to play the game, experience places, and it would therefore draw more business with Expedia. The mobile websites have not changed outside of minor upgrades and small improvements in the last few years. Expedia Group should consider how many airlines to which they have access. As of this research, there are too many steps that a customer needs to take to complete the booking transaction on mobile. Customers will need more value in the future, for a smoother, engaging, and encouraging experience that is platform friendly, no matter the device used. During this study, no travel brands were using video in an effective manner, which was a surprise, especially because video is a tool where the attention of consumers is focused. Theoretical implications are that this research is a contribution to the literature, a meta-study of the travel industry and mobile websites. The researchers did not find any one summary of the current branding environment for the travel industry with mobile devices. Given the rapidly evolving technology and its application within the mobile environment, there are numerous opportunities for further research. Many of the brands present themselves as providing the lowest prices for consumers of travel and hospitality. Initial consideration of this phenomenon as a tangent in this study produced varying pricing results. A more focused study on pricing would be productive to identify which brands really have the lowest prices.

Managers in the travel industry need to consider further research on which behaviors lead to improved metrics and revenue lift. The algorithms that deliver brand value need to be at the forefront of the website engineering mindset. The landscape is changing, and the websites must adapt and change to full self-service. Stale brands are not effective for delivering value. Travel agencies need to use video to add value before, during and even after the travel purchase. The authors suggest that video could be about how to navigate in a city, what the airport looks like, how to draw out your plan of travel, and how to get to the car rental or public transportation after the flight is booked. Many of the websites prominently provided links to their apps which are downloaded to an individual's mobile device. These apps were presented as making it even easier for an individual to make travel and hospitality reservations. An exploratory and comparative study of these mobile apps would also produce useful information for marketers who know that younger users are more likely to use them. One of the technologies that is becoming more prominent in a variety of industries is Artificial Intelligence (AI). AI has transformed the ways people access information from such technology as smart speakers, allowing for voice activated search and purchase. It has the potential to have significant impact on the ways people access and plan travel and hospitality using their mobile devices. Exploring both the uses of AI and the opportunities of apps for travel agencies would also be productive for the OAT industry to thrive.

## CONCLUDING COMMENTS

The goal of this paper was to evaluate how the top travel websites appear on mobile devices and to evaluate how these websites presented the companies' brands in that environment. The researchers adapted models to provide criteria to complete evaluations in these specific situations. Visitors to these websites were expected to have two primary needs: information about their travel alternatives and ease in making travel purchases. Websites in Expedia Group consistently provided the more productive experience for visitors. They received top ratings for both the information area and satisfaction from completing purchases. Finding the most important information sought by visitors as well as completing purchases were functions found to be more challenging. Effectively presenting a consistent branding message was challenging for all the websites. All websites appeared to be seeking to present a brand image of the "best" way to meet the needs for air, hotel, and car rental purchases. They were able to provide these services with adequate speed and access. None were able to provide enough examples of being on the "cutting edge." They were limited in using stock still photography and generic text. There were extensive opportunities for these websites to enhance the presentation of their brands. Managers of travel websites will discover in these results opportunities to more closely examine their own websites and identify ways to improve both the users' experiences and to better differentiate their offering from those of their competitors. The adapted models used in this research provide specific guidance to these managers. This research provides an initial examination of the websites providing travel services to the public. The primary contribution of the research is to create these evaluative perspectives and demonstrate how they can be used. The major limitation of this study is that it is qualitative research in which the source of the data was the two researchers' experiences. In this way, the results are informative but not generalizable. Additional research can be completed drawing on a sample of the users of these websites. Such quantifiable research will address the limitation of this study.

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# FEMALE ENTREPRENEURSHIP AND SMALL AND MEDIUM-SIZE ENTERPRISE GROWTH: EVIDENCE FROM CONGO

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## ABSTRACT

*Female entrepreneurship depends both on the women's situation and the place of entrepreneurship in a society. Firms under women management are actually increasing quickly in Congo. However, women entrepreneurs are still facing insufficient human and social capital, and limited access to adequate financial resources to grow their firms because of discrimination and gender issues. This study aims to analyze SME growth owned by women, and thus, raise the relationship between female entrepreneurship and SME growth. Data was collected empirically by using a structured questionnaire and treated using descriptive statistics and the Logistic Regression. The findings confirm that SMEs owned by women show a better sales growth and a low employment growth. It is because women usually use family workforce (labor). The logistic regression findings show a positive and significant relationship between firm's age and sales growth, and a negative relationship between idea to create firm and employment growth. Thus, women entrepreneurs are still having insufficient social capital and financial resources needed to grow their firms. Keywords: Women entrepreneurs, SME growth, Bukavu town, Female entrepreneurship*

**JEL:** L26, L31, M13, M16, M29

**KEYWORDS:** Female Entrepreneurship, SME, Congo

## INTRODUCTION

The SME growth is the outcome of a veritable management decision where entrepreneurs are its main responsible (Delmar and Davidsson, 2001; Pierre et al, 2006). It is followed by increasing products or services demand of the firm (Bouazza et al., 2015; Davidsson, 2006; Gueguen, 2010). Initially, this would have an effect of increasing sales. Second, it would allow the firm to invest in additional production factors to face the new level of demand (Janssen, 2011). Therefore, SME growth is uncertain due to environmental conditions, such as competition and the dynamics of markets (Bouazza, 2015; OCDE, 2002; Pearson Education France, 2007; Raduan et al., 2006).

Beyond financial resources (Memba et al., 2012; Pierre et al., 2006), SME growth depends both on entrepreneurs' human and social capital, and on his or her gender (Chiraz and Nouri, 2014; Dawn and Gaylen, 2007; Janssen, 2002). The reasons why are that entrepreneurs are the ones who assume the total responsibility of their firms and make strategies to manage them (Gueguen, 2010). Thus, entrepreneurs' gender play a significant role in firm management between firms owned by women and men (Dawn and Gaylen, 2007; Janssen, 2002; Haibo and Gerrit, 2009; Malika, 2001). Scholars in female entrepreneurship (Nina et al., 2005; Robert, F. et Alicia, 2008) show that this difference in gender management is not significant (Didier and Typhaine, 2013; Fiona et al., 2007) and sometimes, it is based on gender discrimination (Ascher, 2012; Balemba et al., 2014; Chamberlin, 1996; Malika, 2001; Mohammed, 2011).

Female entrepreneurship depends both on women's situations and the place of entrepreneurship in a society (OECD, 2004). It is considered a source of growth that is insufficiently exploited and took an important place in most of industrialized countries, and a specific characteristic (micro enterprise) in developing countries (Hassan and Mugambi, 2013; Viviane et al., 2005). Thus, female entrepreneurship is not homogeneous and appears different in countries depending on the cultural background, education level and skills and business size and scale (Greene et al., 2004; Mohammed, 2011). Women entrepreneurs' decisions how to undertake and business logic are not identical (Bouzekraoui, 2014; Kalpana, 2016; Mohammed, 2011; Nina et al., 2005). Thus, women hold at least 25% of all companies in the world (Fiona et al., 2007; Mboko and Smith-Hunter, 2006).

In the Democratic Republic of Congo (DRC), especially in Bukavu town, firms under women management are increasing quickly and have been observed since 2003, when women began to control the same sized companies as men, and face cultural barriers like being active in areas reserved previously to men and authorities in their household (Balemba et al., 2014). Despite the increasing number of SMEs in Bukavu town and their contribution to the economy, women entrepreneurs face limited access to adequate financial resources (Balemba et al., 2013; Makunza, 2000) due to lacking sufficient guarantees to get a credit in MFIs, discrimination and gender issue. Women entrepreneurs also face insufficient human and social capital necessary to facilitate their SMEs growth (Balemba et al., 2014).

The limited access to financial resources remains a major obstacle to creation, survival and SME growth (Balemba et al., 2013; Bouazza et al., 2015; Gueguen, 2010; Makunza, 2000; Memba et al, 2012; OSEO, 2009; Thione, 2006). The regulation, taxation, abandonment of infrastructure and social security, corruption, and the high level of uncertainty in many areas of entrepreneurial activity are also barriers to SME growth in the DR Congo (Mufungizi and Teimann, 2012). Firms owned by women also face these barriers to grow (Hassan and Mugambi, 2013; Robichaud and Egbert, 1992; Smith-Hunter and Joshua, 2010). Given these multiple problems, the present study aims to analyze women owned SMEs growth and thus, the relationship between female entrepreneurship and SMEs growth in Bukavu town.

The McKinsey & Company (2007) studies, named "Women Matter" shows that companies that have a strong representation of women in their management committee, or their management teams, would also be more efficient. European companies with the highest diversity in leadership positions recorded the best performance in financial profitability, operating income, and market growth over the period 2003-2007. The consulting firm Women Equity has screened 40,000 small and medium sized enterprises (SMEs) and showed that those owned by women are more likely to experience a growth in turnover for the year 2013 (70% against 67% for those owned by men for similar sized SMEs). Additionally, Swithina and Smith-Hunter (2009) conducted a study in Zimbabwe and tried to analyze the strategies of small businesses owned by women. Using a qualitative approach, their finding indicated that women had survived the turbulent business environment and obstacles of ancestors. The following section develops the literature review based on previous studies. So, literature review of SME growth and female entrepreneurship is discussed.

## LITERATURE REVIEW

### Female Entrepreneurship

A woman entrepreneur is looking for personal fulfillment, financial autonomy, and control of her existence by launching and managing her own business (Ascher, 2012; Belcourt et al., 1991 cited by Bouzekraoui 2014). She is an individual who is in an inactive situation, unemployed or employee and dependent on an employer, who alone or in teams, creates a new independent company, assuming managerial responsibilities and risks related to planned production's fortune (Chamberlin, 1996; Paturel 2006 cited by Balemba et al., 2014). Therefore, she is also called a business owner-manager, business owner or business leader, as a woman who, alone or with partners, founded, purchased, accepted or inherited a company, who assumes

the risks and the financial, administrative and social responsibilities of it and participates in its daily management (Charmes, 1996; Lavoie, 1988 cited by Bouzekraoui 2014).

The first work on female entrepreneurship has appeared in the US, there are about forty years with the author Eleanor Schwartz (1976). Then there was the work developed by the group DIANA that marked the history of this subfield, which is now conducted in the international area (Didier and Typhaine, 2013). Research on women entrepreneurship in the Democratic Republic of Congo are relatively new and rare, with studies to substantial samples to identify the reality of leadership in SMEs.

Women entrepreneurs face challenges when they are developing and managing their activities and many of these challenges remain even after their business establishment and growth (Bouzekraoui, 2014; Greene et al., 2004; Kalpana, 2016; Malika, 2001). A number of barriers women entrepreneurs face affects the SME development and growth including the lack of knowledge, and skills they need to grow their businesses (Malika, 2001; Subhash and Sunita, 2007). Several studies show that with equal business opportunities, women have more difficulty to obtain funding than men and, therefore, more difficulty developing their projects (Dawn and Gaylen, 2007; Fiona et al., 2007; Hassan and Mugambi, 2013; Robert and Alicia, 2008; Viviane et al., 2005).

Thus, funding remains a major problem for SMEs owned by women, compared to those owned by men, from the creation, to the effective operation of their business (Balemba et al., 2013; Haibo and Gerrit, 2009; Thione, 2006), which funding must be continuous to promote the SME expansion. However, as women begin to enter into entrepreneurship at this time, they lack role models (Dawn and Gaylen, 2007; Didier and Typhaine, 2013; Mohammed, 2011; OCDE, 2004) and therefore they lack experience (Bouzekraoui, 2014; Malika, 2001; Muriel and al., 2014; Nina et al., 2005; Smith-Hunter, 2010). Women also lack the necessary networks and social status that can allow them access to aid, financial resources and necessary information to create and manage their firms (Malika, 2001; Robert and Alicia, 2008; Swithina and Smith-Hunter, 2009). Women are also facing cultural barriers like their family obligations that often prevent them from exercising a full-time job or career (OECD, 2004).

Different factors influence women to enter entrepreneurship (Balemba et al., 2014; Bouzekraoui, 2014; Hassan and Mugambi, 2013). Positive factors that influence women to enter into entrepreneurship are market opportunities, interest in a particular economy sector, social goals, the need to have flexible schedules, a bigger salary and financial independence (Bouzekraoui, 2014; Chamberlin, 1996). Other factors can influence women into entrepreneurship; they are family support, perception, the environment in which they live, their age, level of education, marital status, professional experience, unemployment, access to financial resources, risk aversion and innovation (Balemba et al., 2014; Hassan and Mugambi, 2013).

### SME Growth

Many authors, in their research, have tried to understand the SME growth (Bouazza et al., 2015; Davidsson, 2006; Gueguen, 2010; Janssen, 2002; Janssen, 2011; Teurlai, 2004; Pierre et al., 2006). To define it, they based it on several indicators such as physical indicators (area, number of buildings or establishments ...), human indicators (number of employees), economic indicators (sales, value result, payroll, etc.), financial indicators (value creation, market valuation) and on the firm's operating period (OSEO, 2009).

Based on some indicators, SME growth is defined as an increase in turnover, number of employees and market part (Pearson France, 2007; Janssen, 2011). It supposes the success, performance, profitability, financial accomplishment and is one of the main goals to achieve for many firm's leaders, in fact, that growth is characterized by the success and different progresses made by the firm (Davidsson, 2006; Gueguen, 2010; Teurlai, 2004).

The reasons for this SME growth are not only theoretical, and the question may arise from the creation of the firm, even in the period preceding the creation (Teurlai, 2004; Pierre et al., 2006). Therefore, over 40% of business projects do not realize in time, almost 25% of the created firms do not exceed the first year, and less than 30% cross the barrier of 10 years (Janssen, 2002; OECD, 2002). According to the Belgian economist Maurice Ansiaux (1926), the SME growth depends on others elements like chance, opportunities exploited in time, and also the special ability to adapt based on changes in the economy (Pearson France, 2007).

Many factors influence the SME growth (Memba et al., 2012; OCDE, 2007; Pierre et al., 2006; Raduan et al., 2006; Robichaud and Egbert, 1992; Teurlai, 2004). These factors may be related to the characteristics of the entrepreneur, size, the financing structure, and business environment (Janssen, 2011). The entrepreneur expertise, his family history and motivation, being among those characteristics, influence positively the growth of the firm (Janssen, 2002). Beyond these factors, factors related to the industry in which an entrepreneur operates such as the competitiveness of the sector may also influence the SME growth (Teurlai, 2004). Therefore, entrepreneurs play the main role in the SME growth. In fact, this one is their responsibility and depends significantly on their skills, experience, formation, motivation, personality, and network (Gueguen, 2010).

Therefore, entrepreneurs are facing some obstacles to grow their firms. These obstacles can be financial in nature such as the difficulty of loan access, inadequate management, difficulty gaining access to the markets. There are also institutional constraints, such as the lack of coordination between the different institutions that can contribute to the promotion of SMEs, and psychosocial constraints, such as the preference of the present rather than the future that stifles the entrepreneurship spirit, and lack of risk appetite (Makunza, 2000). Other obstacles are also related to the environment in which the firm operates, such as taxation, SME managers' skills and firm technological capabilities (Bouazza et al., 2015; Mufungizi and Teimann, 2012).

### Female Entrepreneurship and SME Growth

In the relationship between female entrepreneurship and SME growth, factors related to the women entrepreneurs, the firm, the social and human capital are considered.

*The age of a woman entrepreneur* is a factor that can influence a firm's management behavior. An older entrepreneur is less averse to the risk than a young entrepreneur and thus, less willing to adopt innovative behavior or join a new idea since the economic and social responsibility is higher in old age (Janssen, 2002). Therefore, some researchers think that the typical age to enter entrepreneurship is between 25 and 40 years (Balemba et al., 2014; Bouazza, 2015). While young people are more likely than older people to grow their businesses significantly, several studies find a negative impact of the entrepreneur's age or the average age of the leadership team on business growth (for example, Bouazza et al., 2015; Davidsson, 2006; Gueguen, 2010; Janssen, 2002; Pierre et al., 2006). So, there is a negative relationship between SME growth and a woman entrepreneur's age, when she is advanced in age, unless she can grow her business because of risk aversion. As most of women entrepreneurs are married, they can grow their businesses significantly because they can be financially or morally supported by their husbands

*H 1: There is a negative relationship between woman entrepreneur's age and SME growth*

*H 2: There is a positive relationship between woman entrepreneur's marital status and SME growth*

Additionally, different factors related to the firm can influence the SME growth. Working before in the same activity sector can facilitate the implementation of corporate strategies (Bouazza, 2015; Bouazza et al., 2015; Davidsson, 2006; Janssen, 2011) and then being associated positively with SME growth. In fact,

there are activities sectors that show a faster development than others (Janssen, 2002; Teurlai, 2004). Indeed, the firm's age takes an important place to analyze different factors related to the firm that can affect the SME growth (Haibo and Gerrit, 2009; OCDE, 2002. OSEO, 2009). It is sometimes associated with the reason of failure (Roxane and Janssen, 2015). Therefore, Delmar and Davidsson (2001) indicated in their study that young firms are more likely to grow significantly than older firms and thus, young and medium size firms create most of the new jobs in growing and young industries (Janssen, 2002). In that way, firm's age is negatively associated with SME growth. Beyond those factors, financial resources take an important place in SME growth. Some studies (for example, Janssen, 2011; Pierre et al., 2006; Raduan et al., 2006; Robichaud and Egbert, 1992) show that having significant financial resources to create a firm, increases the success potential and firm growth. It supposes getting significant financial resources to create a firm is associated with the firm's success in the future (Robert and Alicia, 2008). Therefore, self-financing is rarely sufficient to finance the firm growth, using mixed capital composed both of owned and borrowed funds has an influence on the firm's growth (Balemba et al., 2013; Janssen, 2011).

*H 3: There is a positive relationship between the firm activity sector and SME growth*

*H 4: There is a negative relationship between the firm's age and SME growth*

*H 5: There is a positive relationship between using mixed capital and SME growth*

Beyond financial resources, human capital takes an important place in factors influencing the SME growth. Thus, education level can improve women entrepreneurs' skills and abilities (Fiona et al., 2007; Hassan and Mugambi, 2013; Smith-Hunter, 2010; Subhash and Sunita, 2007). Hence, a high level of education facilitates access to knowledge, capital and even the recruitment of qualified staff that contribute to firm's success (Raduan et al., 2006; Smith-Hunter and Joshua, 2010). Several studies show that the entrepreneur education level has a positive impact on growth (Balemba et al., 2014; Janssen, 2002; Raduan et al., 2006; Robert and Alicia, 2008; Subhash and Sunita, 2007; Swithina and Smith-Hunter, 2009). Thus, having made a similar activity to the actual activity can have a positive impact on growth because the entrepreneur has knowledge in the field where he operates (Janssen, 2010) and then allows the entrepreneur to acquire some experience. If the previous activity was a success, a woman entrepreneur is better positioned to significantly grow her business. If it was a failure, then this failure can be considered as a learning opportunity and could be the basis of a future project success (Amirali, 2016; Bacq et al., 2016; De Hoe and Janssen, 2014; Kuyatt, 2011; Roxane and Janssen, 2015; Shepherd, 2003; Singh, 2011; Singh et al., 2007; Walsh and Cunningham, 2016). Empirical studies show that knowing the sector in which we operate can have a positive effect on the firm's success, both in terms of survival and on the growth plan (Gueguen, 2010; Janssen 2002; Memba et al., 2012; Nina et al., 2005; OSEO, 2009; Subhash and Sunita, 2007). However, previous experience acquired during studies and working life facilitate the discovery and exploitation of opportunities (OECD, 2004; Subhash and Sunita 2007). The lack of experience and business management skills is considered as a major obstacle to the creation, survival and business growth (Bouazza et al., 2015; Gueguen, 2010; Makunza, 2000; Mufungizi and Teimann, 2012; Muriel et al., 2014; OSEO, 2009).

*H 6: There is a positive relationship between education level and SME growth*

*H 7: There is a positive relationship between experience and SME growth*

Social capital can also have an impact on SME growth (Chiraz and Nouri, 2014). Being interested by a person to create a firm can have a positive effect on growth because that person has knowledge of the sector in which he suggests and will support you in case of problems. However, a woman who had the idea herself to create an enterprise will grow it according to her motivations. Therefore, the reason why women create a firm is the basis of her success in business because it constitutes her main motivation. Thus, woman firm growth depends partially on that motivation (Ascher, 2012). Therefore, having a family member who is an entrepreneur is beneficial for the woman entrepreneur. In fact she can receive support and assistance that can lead her to grow her activities (Janssen 2010; Hassan and Mugambi, 2013). However, the fact of belonging to a family of entrepreneurs increases the chances of a woman's business survival because she

can easily use these members for moral guidance and financial support, or even have benefited the business learning by working in family businesses in the past (Chiraz and Nouri, 2014; Robert and Alicia, 2008). Being associated in entrepreneurial activities when a woman was young by helping parents in their entrepreneurial activities can create an entrepreneurial interest in her to succeed in her activities like the parents (Balemba et al., 2014).

*H 8: There is a positive relationship between idea of firm creation and SME growth*

*H 9: There is a positive relationship between reason of firm creation and SME growth*

*H 10: There is a positive relationship between family history and SME growth*

*H 11: There is a positive relationship between being associated in entrepreneurial activities and SME growth*

## DATA AND METHODOLOGY

The current study uses an exploratory, quantitative research design. Data used in this study have been collected empirically from women entrepreneurs in Bukavu town by using a structured questionnaire inspired by previous studies. Because women entrepreneurs are almost absent in some activity sectors, we collected data from women entrepreneurs acting in four sectors including general trade, pharmacies, garages and workshops, as well as hotels and bars. The survey was conducted directly at the women entrepreneurs' workplace from the period 11 August to 13 September 2016. We collected data only from women entrepreneurs with at least one year of seniority. A questionnaire was submitted to the respondent, she could respond immediately, or even make the survey an exchange of ideas after realizing the importance of our research. We left some questionnaires to other women entrepreneurs who were busy working and came back after a day to take it. To collect data, we randomly selected 120 firms owned by women entrepreneurs. In total, 102 women entrepreneurs agreed to participate in our study, resulting in a response rate of 85 percent.

In the present study, we treated data by using both descriptive statistics and logistic regression with SPSS version 20 as Janssen (2002, 2011) suggested to measure the SME growth in case that firm growth is not a linear phenomenon but a dynamic and non-linear phenomenon (Janssen, 2002; Janssen, 2011). Therefore, we did two logistics regression including a logistic regression of employment growth and a logistic regression of sales growth. In general, the logistic regression is the dichotomous model with "one" if there was growth and "zero" if there was not. Therefore, the dependent variable in the current study in the SME growth in employment and/or in sales. These two firm growth indicators are much used by different scholars because they are easy to identify and reflect the short and long-term firm change (Bouazza et al., 2015; Gueguen, 2010; Janssen, 2002; Teurlai, 2004). Sometimes these two indicators cannot necessarily be complementary and do not involve the same determinants, in fact by introducing new technologies, increased sales could well perform without involving an increase in labor and also an employment increase in the retail business could not be followed by an immediate increase in sales (Janssen, 2011).

The following regression equation was estimated to identify the relationship between different variables related to women entrepreneurs and SME Employment Growth (SMEG) and SME Sales Growth (SMESG).

$$\text{SMEG} = \alpha + \beta_1(\text{age of woman entrepreneur}) + \beta_2(\text{marital status}) + \beta_3(\text{firm activity sector}) + \beta_4(\text{firm age}) + \beta_5(\text{used mixed capital}) + \beta_6(\text{education level}) + \beta_7(\text{experience}) + \beta_8(\text{idea of firm creation}) + \beta_9(\text{reason of firm creation}) + \beta_{10}(\text{family history}) + \beta_{11}(\text{being associated in entrepreneurial activities}) \quad (1)$$

After doing these logistic regressions, we will raise up the relationship between female entrepreneurship and SME growth. The following will present and discuss findings.

## RESULTS

This section presents results related to women entrepreneurs and SME growth. At first, we present findings of descriptive statistic and then results of logistic regression are presented.

Table 1: Descriptive Statistic Related to Women Entrepreneurs

Variables	Characteristics	Numbers	Percentage
Age of woman entrepreneur	Under 20 years	2	2%
	20 to 30 years	34	33.3%
	30 to 45 years	34	33.3%
	45 to 60 years	32	31.4%
	<b>Total</b>	<b>102</b>	<b>100%</b>
Marital status	Single	23	22.4%
	Married	64	62.7%
	Widow	15	14.7%
	<b>Total</b>	<b>102</b>	<b>100%</b>

*This table presents results related to the frequency of age and marital status of women entrepreneurs. The first column presents different variables, which are age of women entrepreneurs and marital status of these women. The second, presents characteristics related to age of women entrepreneurs and marital status. The third, the number of each characteristic related to each variable and then, the fourth column presents the percentage of each characteristic of different variables related to women entrepreneurs.*

Results in Table 1 indicates that the age of the majority of women is between 20 and 45 years, either 33.3%. Therefore, women in Bukavu town enter entrepreneurship being young because of the lacking hope to find employment in the future after graduation. Malika (2001) found the similar result in south India. So, the majority of women entrepreneurs are married, either 62.7%. Smith-Hunter and Joshua (2010) found the similar results in Brazil. Following this high rate of married women, whose ages are between 20 and 45 years, they are moving into entrepreneurship to contribute to their household income and expenses and be independent. These findings complete the one by Balemba et al. (2014).

Table 2: Descriptive Statistic Related to Firms Owned by Women

Variables	Characteristics	Numbers	Percentage
Activity sector	General trade	59	57.8%
	Pharmacy	24	23.5%
	Garage and Workshop	11	10.8%
	Hotels and Bars	8	7.8%
	<b>Total</b>	<b>102</b>	<b>100%</b>
Age of the firm creation	1980-1990	4	3.9%
	1990-2000	6	5.9%
	2000-2010	45	44.1%
	2010-2016	47	46.1%
	<b>Total</b>	<b>102</b>	<b>100%</b>
Financial resources	Mixed capital	31	30.4%
	Equity only	71	69.6%
	<b>Total</b>	<b>102</b>	<b>100%</b>

*This table presents results related to the frequency of activity sector, age of firm creation and financial resources are presented. The first column presents different variables, which are activity sector, age of firm creation and financial resources. The second, presents characteristics related to these variables. The third, the number of each characteristic related to each variable and then, the fourth column present the percentage of each characteristic of different variables related to women entrepreneurs.*

Findings in Table 2 indicate that more than half of women entrepreneurs are working in the sector of general trade, 57.8%. This high rate of women entrepreneurs in the general trade sector is justified by the fact that the general trade sector is much more developed and does not require important skills to enter. Most women

entrepreneurs work in the general trade sector (Malika, 2001; Robichaud and Egbert, 1992; Sedina and Orpha, 2013). Most of the SMEs owned by women are young in DR Congo especially in Bukavu town. 44.1% of them were created in the years between 2000 and 2010 and 46.1% between 2010 and 2016 with an average age of 8 years. Thus, women are now starting to exercise activities once reserved to men (Balemba et al., 2014). However, most of these women use equity to finance their activities, either 69.6% while only 30.4% of these women used mixed capital. What characterizes women entrepreneurs to face the lack of financial resources in the exercises of their SMEs activities using equity is not sufficient and can be the obstacle to growth of their firms. This may be due to the fact that the majority of women are married, as shown in Table 1, and financed by their spouses with startup funds, which may not be sufficient to allow them to develop their firms. This problem of not using mixed capital can be related to the fact that women are risk averse and have some difficulties in accessing credit, following difficult access conditions, interest rates and the lack of guarantee. Most of the study related to obstacles of SME growth indicated that the lack of financial resources is the main obstacle to develop SME firms (for example, Janssen 2011; Hassan and Mugambi, 2013; Kalpana, 2016; Malika, 2001; ; Memba et al., 2012; Mohammed, 2011; Smith-Hunter and Joshua, 2010).

Table 3: Descriptive Statistic Related to Social Capital

Variables	Characteristics	Numbers	Percentage
Creative idea source	Spouse	27	26.5%
	Group or Association	3	2.9%
	Friends	9	8.8%
	Parents	8	7.8%
	Yourself	55	53.9%
	<b>Total</b>	<b>102</b>	<b>100%</b>
Reason of creation	Unemployment	34	33.3%
	Independence	15	14.7%
	family support	43	42.2%
	Market opportunity	10	9.8%
	<b>Total</b>	<b>102</b>	<b>100%</b>
Family history	Yes	63	61.8%
	No	39	38.2%
	<b>Total</b>	<b>102</b>	<b>100%</b>
Associated with entrepreneurial activity	Yes	74	72.5%
	No	28	27.5%
	<b>Total</b>	<b>102</b>	<b>100%</b>

*This table presents results related to the frequency of women entrepreneurs' social capital. The first column presents different variables, which are creative idea source, reasons of creation, family history and being associated with entrepreneurial activity. The second, presents characteristics related to these variables. The third, the number of each characteristic related to each variable and then, the fourth column presents the percentage of each characteristic of different variables related to women entrepreneurs.*

Findings indicate that women entrepreneurs do not have significant social capital required that can allow them to access credit, to have the resources to grow their businesses, to create their businesses by having all the information about the sector in which they wish to operate. Social capital can facilitate entrepreneurs' access to information and resources that are cheaper than those offered by financial institutions (Chiraz et Nouri, 2014). Thus, over half of women entrepreneurs had the idea of firm creation themselves, either 53.9%. Only 26.5% were encouraged to enter entrepreneurship by their husband to contribute to family income. Balemba et al. (2014) find similar results (Table 3). That is why 42.2% of women entrepreneurs are moving into entrepreneurship to support their family, 33.3% of them move into entrepreneurship because of unemployment and only 14.7% to be independent. Therefore, the reason to move into entrepreneurship is the main motivation pushing women to grow their activities and thus provide solution to poverty reduction of their environment (Sedina and Oprha, 2013). Thus, 61.8% of these women

entrepreneurs had at least one family member who is an entrepreneur. This result is similar with one find by Malika (2001), Robert and Alicia (2008) and contradictory to the one by Smith -Hunter and Joshua (2010). This means that the majority of women can benefit moral or financial support, learning of entrepreneur activities by working when young in family businesses. However, 72.5% of women were associated into entrepreneurial activities in their youth, which can build in them an interest to move in entrepreneurship.

Table 4: Women Entrepreneurs and SME Growth in Employment and Sales

Observation	Variables	Employment	Sales	Employment %	Sales%
1	Growth	31	56	30.4%	55%
2	Stagnation	42	31	40.8%	30.2%
3	Regression	29	15	28.8%	14.8%
	Total	102	102	100%	100%

*This table presents results related to the growth of SMEs owned by women. The first column presents different observations. The second presents different variables, which are growth, stagnation, and regression. The third column the employment numbers, the fourth column presents the sales number. The fifth column presents the frequencies of each variable related to employment and then, the sixth column presents the frequencies of each variable related to sales.*

Results in Table 4 indicate that only 30.4% of SME owned by women show an employment growth and 55% show sales growth. In Bukavu town, women entrepreneurs usually use family workforce. That is why it observed the low rate of job creation in SME owned by women. Thus, 62.7% of women entrepreneurs in Congo are married and their age is between 20 and 45 years. Smith-Hunter and Joshua (2010) find the same reality about the marital status of women entrepreneurs in Brazil. Following to this high rate of married women in entrepreneurship and their age that is between 20 and 45 years, it is considered that women are moving into entrepreneurship to bring contributions and solutions to their household income and expenses and then to be independent. This one completes research done by Balemba, Lukuitshi and Muhindo (2014). These results also indicate that 40.8% of SME owned by women entrepreneurs show a stagnation of employment, and 30.2% a stagnation of sales. This high rate of stagnation is explained by the fact that during the period of our study (2011-2016), job creation and sales growth are not proportional in different sectors due to cyclical fluctuations. There are activities sectors that are more developed than others and SMEs that are located in those sectors are experiencing rapid growth in sales compared to the others (Teurlai, 2004). Reasons why the present study focused in some activities sectors, for example, in Congo especially in Bukavu town, general trade is the most activity sector developed and dominated by the export-import activities (Balemba et al., 2013; Makunza, 2000; Mufungizi and Teimann, 2012). Some studies (for e.g. Bouazza, 2015; Bouazza et al., 2015; CGPME., and KPMG, 2012; Davidsson, 2006; Haibo and Gerrit, 2009) indicates the predominance of the general trade sector in countries under development. Therefore, 57.8% of women entrepreneurs act in the general trade sectors in Bukavu town. This high rate of women entrepreneurs in the general trade sector is justified by the fact that this sector is much more developed and does not require a lot of skills to enter. Those results are confirmed by some studies (for example, Malika 2001; Robichaud and Egbert 1992; Sedina and Orpha, 2013).

Table 5 shows the relationship between some variables related to female entrepreneurship and SME growth. The age of a woman entrepreneur has a positive relationship with sales growth and that relationship is significance at the 5% level. This means that when a woman entrepreneur is advanced in age, her firm is disposed to show a better sales growth as she acquired skills and abilities with age (Janssen, 2011; Hassan and Mugambi, 2013). Therefore, when a woman entrepreneur is advanced in age, she acquires loyal customers, controls market and entrepreneurial process. This can allow her to get sales growth. The same results were found by Janssen (2002), Janssen (2011), Teurlai (2004) and Bouazza et al., 20015.

The results in this table indicate also that the activity sector has a negative relationship with sales growth and that relationship is significance at the 5% level. Being in an activity sector negatively affect the sales

growth. It is based on the presence of little developed and competitive activities sectors in Bukavu town. Most of the women entrepreneurs work in the general trade sector which is more developed and show a high competitiveness level that do not allow a better sales increasing because it is staturated. Thus, 57.8% of women entrepreneurs work in the general trade sector. Teurlai (2004) showed that sales and employment growth in an activity sector depend on the sector’s competitiveness, in fact that activities’ sectors are developing differently. The logistic regression shows a positive relationship between the age of firm and sales growth and employment growth at the 5% and 1% significance level. This implies that the more the firm owned by women is advanced in age (year of creation), the more it is disposed to grow in employment and sales. With time, firms acquire loyal customers, control their environment, develop and grow activities and thus, create jobs to face that firm growth. These results contradict the one find by Janssen (2002) and Teurla (2004).

Table 5: Logistic Regression of Different Variables Related to Female Entrepreneurship and SME Growth

Variables	Sales Growth		Employment Growth	
	Coefficient	Sign.	Coefficient	Sign.
Age of woman entrepreneur	1.251981	(0.013)**	0.1552885	
Marital status	-0.4734802		-0.7337654	
Activity sector	-0.7172804	(0.032)**	0.463212	
Firm age	0.1133182	(0.011)**	0.1390018	(0.003)*
Used mixed capital	0.6466161		0.219495	
Education level	-0.3764879		-0.3092288	
Experience	0.1030412		0.0939386	
Idea of firm creation	-0.3998303	(0.032)**	-0.3253733	(0.045)**
Reason of firm creation	0.1601677		0.4667545	
Family history	0.9622394		-0.0949488	
Being associated	0.7346895		-0.0004201	
Constant	-3.017288		-2.038628	
Number of obs.	102		102	
LR chi2(11)	49.09		24.87	
Prob > chi2	0.0000		0.0095	
Pseudo R2	0.3593		0.2042	
Log likelihood	-43.764423		-48.459306	

*This table shows the relationship between some variables related to female entrepreneurship and SME growth. The first column presents different variables related to female entrepreneurship. The second column reports the logistic regression of sales growth and these different factors and then, the third column reports the logistic regression of employment growth and these different factors related to female entrepreneurship. Therefore, \*, \*\* and \*\*\* indicate significance at 1, 5 and 10 percent levels, respectively.*

The findings in the table also show the negative relationship between the idea of firm creation and sales and employment growth. This relationship is significance at the 5% level. This negative relationship between the origins of the idea of firm creation and sales and employment growth is explained by the fact that most women entrepreneurs are themselves interested to enter entrepreneurship, 53.9% of these women because of the lack of support. Therefore, they have insufficient social capital needed to grow their business. That is why having at least one family member who is an entrepreneur significantly increases the probability of 20% to grow sales.

Individual regression results presented in Table 6 reports that the age of women entrepreneurs influences positively and significantly the employment growth. The more a woman entrepreneur is advanced in age, the more she is predisposed to create jobs for other people. It is justified by the fact that most of the developed firms are owned by women advanced in age. That is why, the age of the firm also influences positively and significantly the employment growth. it is supposed that when a firm is advanced in age, it grows its activities and then needs additional workforce to improve its activities. The idea of firm creation

influences negatively and significantly the employment growth. Individual regression results of different independent variables and sales growth show that the majority of these variables influences individually and significantly the sales growth.

Table 6: Individual Regressions Results of Independent Variables and SME Growth

Variables	Coefficient	Sign.	Khi-Chi-Deux
<b>Panel A: Employment Growth</b>			
Age of woman entrepreneur	0.534	(0.050) **	4.044
Marital status	0.168	(0.644)	0.214
Activity sector	0.160	(0.475)	0.501
Firm age	0.105	(0.002)*	12.386
Used mixed capital	0.265	(0.572)	0.316
Education level	-0.397	(0.214)	1.633
Experience	-0.072	(0.877)	0.024
Idea of firm creation	-0.242	(0.054) ***	3.731
Reason of firm creation	0.311	(0.154)	2.084
Family history	-0.184	(0.681)	0.169
Being associated	-0.009	(0.985)	0.000
<b>Panel B: Sales Growth</b>			
Age of woman entrepreneur	1.119	(0.000) *	18.244
Marital status	0.716	(0.044) **	4.307
Activity sector	-0.751	(0.007) *	9.224
Firm age	0.133	(0.001) *	17.257
Used mixed capital	0.163	(0.710)	0.138
Education level	-0.445	(0.128)	2.444
Experience	0.249	(0.567)	0.331
Idea of firm creation	-0.334	(0.006) *	7.906
Reason of firm creation	0.422	(0.040) **	4.422
Family history	0.775	(0.076) ***	3.279
Being associated	0.420	(0.370)	0.810

*This table presents individual regression results of each independent variable separately and the two dependent variables which are sales growth and employment growth. Panel A shows individual regression results of each independent variable separately and the employment growth. Then, Panel B presents individual regression results of each independent variable separately and sales growth. The third column reports significance of all these individual regressions and, \*, \*\* and \*\*\* indicate significance at 1, 5 and 10 percent levels, respectively.*

## CONCLUDING COMMENTS

Most of the scholars in female entrepreneurship tried to understand the place and role of women entrepreneurs in a society, different barriers they face to develop their business and the determinants of female entrepreneurship. We have tried in this study to enrich these studies by analyzing SME growth owned by women and thus, raise up the relationship between female entrepreneurship and SME growth. It is a quantitative and exploratory study and used descriptive statistics and logistic regression to realize these objectives.

Findings indicate that SMEs owned by women show a better sales growth and a low employment growth. It is because women usually use family workforce (labor). This implies that the rate of job creation by women entrepreneurs is still low. The results of logistic regression indicates a positive relationship between the age of a woman manager and sales growth, negative relationship between activity sector and sales growth, positive relationship between firm's age and sales and employment growth and also, the negative relationship between idea of firm creation and sales and employment growth. Those findings imply that women entrepreneurs are still facing the lack of important financial and social capital necessary to develop their businesses and the gender issues in Congo. Because of this, they still struggle with inadequate financial

resources, significant social capital, and "gender" issues in the exercise of their activities, which constrain their businesses' growth. However, it becomes important to encourage women entrepreneurs by creating more training associations, financial and entrepreneurial education centers, trades training and financial support to allow them to improve their activities and thus contribute significant value added to their environment and GDP by creating employment.

Indeed, having captured sales on scales of a specified amount can constitute the first limit and can lead to subjective results. This choice is related to the fact that entrepreneurs in Bukavu town did not deliver real information related to the financial situation of their enterprises. The second limitation is related to the lack of using some important variables such as motivation, proactivity, innovation, risk taking and husband's occupation. A more comprehensive approach considering those limitations such as survival, access to credit, risk-taking, innovation, proactivity, the role of leadership, vision and growth of SMEs and cause of women entrepreneurial failure may contribute to complete results obtained in the present study.

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## **BIOGRAPHY**

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# **AN ENHANCED MANAGEMENT TOOL FOR CREATING PRO-FORMA FINANCIAL STATEMENTS**

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## **ABSTRACT**

*The creation of pro-forma financial statements presents a challenge for entrepreneurs without extensive training in finance and accounting. This paper is the third in a series that provides tools to assist managers with creating these estimates. The approach requires users to estimate only management variables. The template completes all other necessary calculations. This paper extends earlier work by introducing additional automation. Specifically, the template here automates tax and cost of capital calculations.*

**JEL:** A2, G31, M13, M41

**KEYWORDS:** Financial Statements, Pro-Forma Financial Statements, Forecasting, Entrepreneurship, Small Business Finance, Accounting for Small Businesses

## **INTRODUCTION**

**P**ro-forma financial statements and associated analysis constitute an important element of planning for new ventures. Entrepreneurs lacking a strong accounting and finance background do not possess the necessary tools to create the analysis. Moreover, hiring professionals to complete the task utilizes scarce resources needed for other purposes. The tools presented here allow individuals with little training to create computationally correct pro-forma financial statements. The tool has sufficient sophistication to meet the needs of most professionals.

Numerous tools exist to automate the creation of pro-forma financial statements. Vélez-Pareja, and Tham (2008); Vélez-Pareja (2011); and Arnold (2011) note that some available options require plug figures to balance the financial statements. Plug figures fail to reflect actual business plans and limit the usefulness of pro-forma financial statements. Other tools suffer from circular references that introduce inaccuracies into the analysis. The tools presented here do not require plug figures. Rather, each calculation is fully founded in accounting principles. Furthermore, the tools here do not contain circular references.

This paper represents the third in a series focusing on the development of pro-forma financial statements. The techniques provide comprehensive financial analysis tools geared primarily for start-up firms. The first paper in the series provided the initial analysis tool (Jalbert, 2107). The template includes income statements, balance sheets, cash flow statements and statements of retained earnings. The second paper (Jalbert, 2019) provided some technical fixes and introduced additional features to address common issues.

During several years of use, the author observed user difficulty with completing some elements of the template. Specifically, users have trouble estimating tax amounts and capital costs. This paper modifies the previous templates by automating basic tax calculations and eliminating the need for users to estimate capital costs. Previous versions of the template required users to estimate tax rates. While it is not possible to fully automate all provisions of the U.S. tax code, the template here incorporates basic features of the tax code including business income exclusions, standard deductions, variations in tax due based on marital status, state tax liabilities, progressive tax rates, and income from non-business sources. Users must input

their non-business income and marital status into the program. With this information the template provides tax estimates. Previous iterations of the template required users to input capital costs. This paper simplifies this process by requiring users to rate the riskiness of their firm from one to ten. The template includes some guidelines to assist users with this process. With this information the template provides estimates the firm's cost of capital.

The remainder of the paper is organized as follows. The next section provides a review of the literature. The following section documents the template revisions presented here. The paper continues by presenting the revised template. Finally, the paper closes with some concluding comments.

## LITERATURE REVIEW

A small body of literature addresses financial statement forecasting. Jalbert, Briley and Jalbert (2012) used Risk Management Associates (RMA), Annual Statement Studies data that draws on the experience of other firms in an industry to develop financial statements. Their methodology improves upon, and provides more flexibility than, the percentage of sales method. They argue their approach results more accurate financial statements. In a related paper, Vorkink and Workman (2016) addressed sales and sales growth forecasts. They developed a process for estimating sales involving four steps: 1.) calculate historical averages, 2.) use macroeconomic considerations to adjust the historical averages, 3.) incorporate adjustments for industry effects and 4.) incorporate adjustments for company-specific effects.

A second branch of research involves a time series approach to financial statements. Historical financial statements for the firm provide the basis for projecting future financial statements. Kerry (2010) combined historical financial statements of a firm with financial statements of other firms to forecast financial statements. The model requires users to input macroeconomic data and estimates of some financial accounts. The approach combines this information to produce financial statement forecasts.

Vélez-Pareja, I. and J. Tham (2008) and Vélez-Pareja (2011) also developed historically based financial statement forecasts. Their approach produces better forecasts than earlier approaches because it excludes the need for plug figures to balance the statements. Arnold (2011) demonstrated links between long-term debt and common stock in the financial statement forecasting process. He further noted these variables are sometimes treated as plug figures in financial statement forecasting.

Desanctis and Jarvenpaa (1989) considered the effect of presentation method on forecast accuracy. They examined numerical formats, graphical formats, and a combination of the two. They found that graphical formats produce better forecast accuracy. A few other papers develop pro-forma financial statements. Drougas and Johnson (2004) created simulated financial statements that focus on forecast uncertainty. Cheremushkin (2010) focused on retained earnings use by the firm in financial forecasting. Vélez-Pareja (2010) considered the role of tax shields and debt in creating pro-forma financial statements.

Some patents relate to financial statement forecasting. Erwin, Fortheringham and McGuinness (1998), U.S. Patent US6249770, developed pro-forma financial statements derived from historical firm-level account data. They incorporated inflation adjustments and exchange rates to refine the forecasts. Chopra, Masih, Chugh, Bidkar and Navani, 2015 also hold a patent related to pro-forma financial statements.

As noted earlier, the current paper represents the third in a series. The initial paper (Jalbert, 2017), created a template including forecasted financial statements, a capital budget, calculations of firm value and ratio analysis. The template automates many required calculations. The approach minimizes user inputs to focus exclusively on variables controlled by management. The automation guarantees calculation accuracy and frees users to focus on relevant decision issues. The approach avoids using plug-figures and produces fully

supported and consistent statements. In addition, the approach does not create circular references which result in misleading and incorrect calculations.

Jalbert (2019) extended the work of Jalbert (2017). The revised template provides step-by-step directions to walk users through completing the pro-forma financial statements. It also provides data on taxes and cost of capital data directly, thereby eliminating the need to research these issues. The new template includes tools to allow for non-depreciable long-term assets such as land purchases and uses a more conservative capital budgeting approach. The template allows for multiple categories of sales that simplify some cost of goods sold calculations. Finally, the revised template corrects some technical problems and creates error notifications that warn the user of problematic entries.

## TEMPLATE ENHANCEMENTS

The template developed here uses starts from the Jalbert (2019) template. Using the template for about one-year resulted in observations that motivated this template revision. First, users generally do not have sufficient skills to properly estimate tax rates as required by the Jalbert (2017) and Jalbert (2019) templates. In the absence of these skills most users complete the template without adjusting the default tax rates. Jalbert (2019) tried to rectify this problem by providing some information regarding tax rates as a part of the template. However, the issue persisted. The template here requires users to indicate their marital status and any non-business income. The spreadsheet combines this information with business income reported in the template to estimate tax rates and taxes due. While the template automates tax calculations it does not consider all aspects of the tax code. Advanced users may over-ride these automatic calculations.

The second enhancement here involves cost of capital estimates. The Jalbert (2017) template required users to estimate the costs of equity and borrowing money. The Jalbert (2019) template also requires users to estimate these amounts but assists in this process by providing some data on costs of various funding sources.

Table 1: Risk Assessment Guidelines

Risk Level	Guidance
1 (Lowest)	Appropriate for a firm with guaranteed government contracts, a highly stable cost structure and insurance that eliminates other uncertainties. An example is a school bus service having guaranteed contracts with a public-school district. Fuel costs are contracted and full-coverage insurance is maintained to cover other eventualities.
2	Appropriate for firms with guaranteed government contracts. However, the firm may face some risk in input costs or the firm may face other business risks.
3	Appropriate for firms with risk characteristics similar to a large publicly traded firm with stable product demand and cost structures. An example is Proctor and Gamble.
4	Appropriate for small publicly traded firms with some product demand and cost structure risk. An example of such a firm is a franchisee of a national restaurant chain.
5	Appropriate for small publicly traded firms with substantial product demand or cost structure risk. An example of this type of firm might be a franchisee of a smaller chain of restaurants.
6	Appropriate for start-up firms with the owners contributing most of the required capital. The firm operates in an established industry with stable demand and cost structures. Such a firm might be a smaller grocery or auto parts store.
7	Appropriate for start-up firms with a moderate amount of debt. There exists moderate uncertainty about product demand and/or cost structures. Such a firm might be an independent convenience store.
8	Appropriate for start-up firms with substantial debt. There is considerable uncertainty about product demand and/or cost structure. This category includes businesses such as a start-up non-franchise restaurant.
9	Appropriate for firms with large amounts of debt. There exist high levels of uncertainty about product demand and/or cost structure. This category includes firms such as a start-up non-franchise restaurant, located away from a major traffic area.
10 (Highest)	Appropriate for highly speculative firms with product development risks, unknown product demand and unknown cost structures. The firm typically involves high levels of debt and other obligations. This category includes firms such as a start-up firm developing a new cell phone.

*This table shows guidelines for selecting a risk level.*

Observations indicated that users do not examine their own situation and modify the default value accordingly. To alleviate this problem, this template version requires users to rank the risk of their firm on

a scale of one to ten. The template provides guidance to assist users with making this determination. Table 1 shows guidance provided to assist users in selecting the firm's risk level. With this information the template automatically calculates the relevant cost of capital. Advanced users may over-ride these calculations or modify the cost of capital rates applicable to each risk level.

The third change enhances the valuation calculations by incorporating more precise tax calculations and reflecting changes in tax rates that occur through time. Previous iterations of the template use a single non-dynamic tax rate. This revised template incorporates the dynamic nature of tax rates over the project's life. Tax rates contained in the template should be updated annually to reflect current tax policies.

The fourth change involved updating tax and loan rates to reflect market conditions as of July 2020. This generally involved reducing loan rates. Users should update these market rates to reflect any subsequent changes that occur.

The fifth change is a technical correction. In earlier versions of the statement interest expense was estimated based on end-of-year loan balances. This version of the template utilizes beginning-of-year loan balances in interest calculations.

## ASSUMPTIONS

As with most financial models, this template incorporates certain simplifying assumptions. Like previous iterations of the spreadsheet, this template allows depreciated capital equipment purchased out of the project only. Users select from four depreciation methods, 1.) 3-year MACRS, 2.) 5-Year Straight Line, 3.) 5-year MACRS, and 4.) 39-Year Straight Line. Immediate expensing, through the 179 Expense Election or other immediate expensing options applies to capital purchases made after the project start. The calculations assume cost of goods sold (COGS), remains a constant percentage of sales throughout the project life. Advanced users may introduce time-varying COGS which does not necessitate other spreadsheet modifications.

The capital budget utilizes a five-year framework. Capital budget calculations incorporate the sale of all business assets, and payment of all business liabilities, upon completion of year 5 of operations. The template discounts cash flows at the cost of equity,  $K_E$  to arrive at the Net Present Value. Advanced users might utilize a different discount rate or adjust the relevant cash flows considered.

## REVISED FINANCIAL ANALYSIS TEMPLATE

This section presents the revised templates. The Excel spreadsheet contains the seven worksheets that constitute the template. Worksheet 'S1' contains the main worksheet. Worksheet 'S1' contains the input variables, income statement, statement of retained earnings, statement of cash flows, balance sheet, capital budget analysis, computation of firm value, and ratio analysis. All user entries occur in the 'S1' worksheet. The remaining worksheets exist to support Worksheet 'S1'. The worksheet 'Steps' provides step-by-step instructions to assist users in completing the template using data relevant for their firm. Worksheet 'DP' reports depreciation calculations. Worksheet 'CC' provides information regarding the cost of capital. It also includes a new tool to automatically calculate the firm's cost of funds. The 'Tax' worksheet provides current tax information. The new worksheet 'TaxC' provides tax calculations based on income figures reported in Worksheet 'S1'. Finally, worksheet 'EM' contains error messages that appear throughout the template, calling user attention to entries that violate accounting rules.

Table 2 shows provides a sequence of steps to complete the worksheet. The table reflects changes necessary to accommodate the template revisions made here. Specifically, changes occur in Steps 7 and 8. Changes to Step 7 reflect automation of cost of capital estimations. Changes to Step 8 reflect automation of tax

computations. The instructions direct users to specific cells that must be addressed. For best results, users should follow the steps sequentially.

The template requires some user inputs and automatically calculates other figures. Users input items in plain text and the template calculates bolded items. The spreadsheet does not protect template-calculated variables thereby allowing advanced users to make template adjustments as desired. Users should back up their data prior to modifying bolded items to avoid unanticipated outcomes. The document here presents both numeric and formula versions. Tables 1-11 present the numeric format. Corresponding Tables with an 'F' suffix show the relevant underlying formulae. Due to size, some formulae could not be accommodated in the presentation. When this occurred, the indicator \* along with a number directs the reader to the table note showing the formulae.

Table 2: Steps to Complete the Template

	A	B	C	D	E	F	G	H	I	J	K
1	Step 1:	<b>DO NOT MODIFY ANY BOLDED ITEMS. THESE FIGURES ARE AUTOMATICALLY CALCULATED</b>									
2											
3	Step 2:	<b>ENTER DATA FOR YOUR INITIAL (TIME 0) BALANCE SHEET</b>									
4		CELLS: A78-A115: Modify the unbolded row headings to reflect your accounts.									
5		CELLS: B78-B115: Enter the beginning balance sheet data in unbolded cells									
6		CELL A116: <b>Check Error Message:</b> Confirm the Year 0 asset amount equals the liabilities and equity amount.									
7		CELLS B111-G111: Confirm you have included a positive entry for common stock in each year.									
8											
9	Step 3:	<b>INPUT DATA FOR YOUR INCOME STATEMENT FOR YEARS 1-5</b>									
10		CELLS A20-A25: Modify the unbolded row headings to reflect your expense categories.									
11		CELL B4: Input your estimates for COGS as a Percentage of Sales.									
12		CELL B5: Input the General Excise Tax Rate you must pay on your sales.									
13		CELLS: C14-C36, D14-D36, E14-E36, F14-F36, G14-G36: Enter sales and expense estimates in unbolded cells.									
14											
15	Step 4:	<b>REPORT SECTION 179 PURCHASES</b>									
16		CELLS: ROW 26: Report any capital purchases made after the firm was started.									
17											
18	Step 5:	<b>REPORT UNEXPENSED LABOR</b>									
19		CELLS: ROW 145: Report the value of owner labor not expensed on the income statement.									
20											
21	Step 6:	<b>ADDRESS CAPITAL STRUCTURE CHANGES</b>									
22		CELLS: C79-C111, D79-D111, E79-E111, F79-F111, G79-G111: Modify the year 1-5 balance sheets to									
23		reflect changes in accounts. Changes might include increasing or reducing loan balances,									
24		increasing common stock contributions, and changes in assets utilized by the firm.									
25											
26	Step 7:	<b>ESTIMATE THE RISK LEVEL OF THE FIRM</b>									
27		CELL B7: Enter the firm's risk level from 1-10 (1=lowest risk) in cell B7.									
28		Use the guidelines in CELLS M11-M60 to make the determination.									
29											
30	Step 8:	<b>ESTIMATE PERSONAL INCOME AND STATE TAX RATE</b>									
31		CELL: B3 Enter the state income tax relative to the federal tax.									
32		If State taxes due are typically about 1/4 of the federal liability enter 0.25.									
33		CELL B6: Enter your marital status. Use code in CELLS M5-M6									
34		CELLS C8-G8: Enter your personal non-business income.									
35		CELLS C9-G9: Enter your personal capital gain income.									
36											
37	Step 9:	<b>REVIEW THE DIVIDEND POLICY</b>									
38		CELLS: ROW 41: Indicate your planned dividend payments									
39		CELLS: ROW 42: Confirm the dividend payments do not result in negative Retained earnings.									
40		CELLS: ROW 78: Confirm the dividend payments do not result in negative cash balances.									
41											
42	Step 10:	<b>ESTIMATE SALES PRICES FOR ASSETS</b>									
43		CELLS G165-G176: Indicate the recovery amounts of assets utilized by the business.									
44											
45	Step 11:	<b>REPORT RMA RATIO DATA</b>									
46		CELLS: H216-H222: Report relevant ratio values from RMA Annual Statement Studies.									

*This table shows the sequence of steps necessary to complete the template.*

Users being the analysis by entering several required inputs. Table 3 (Table 3F) shows the input variables and provides the income statement. Enhancement to Table 3 over previous template versions comes in the input variables. The changes here simplify required inputs by no longer requiring users to determine of Federal tax rates. Some input is required to estimate State taxes. The template asks users to estimate the typical amount of state tax due relative to the amount of federal tax due. An individual typically owing \$10,000 in Federal tax and \$4,000 in State tax would enter 40 for the input variable State Tax Relative to Federal Tax. Users must also enter the cost of goods sold (COGS) as a percentage of sales. This figure remains constant throughout the five-year analysis. The spreadsheet accommodates both sales subject to a COGS and sales not subject to a COGS. Next, users enter the general excise tax rate, or other sales-based tax rate the business must pay.

Table 3 presented here enhances tax estimates relative to previous template versions. To facilitate tax estimation, the user enters their marital status. Users can select: 1 for Single individuals, 2 for married couples filing a joint return, 3 for Married individuals filing a separate return and 4 for individuals classified as head of household. Finally, the user must estimate the firms risk level. Risk levels range from one to ten with one equaling the safest firm and 10 equaling the riskiest of firms. Table 1 provides guidance for making the estimation.

Table 3: Input Variables and Income Statement

	A	B	C	D	E	F	G
1	<b>INPUT VARIABLES</b>						
2							
3	State Tax Relative to Fed Tax*	25.000%					
4	Cost of Goods Sold as a % of Sales	40.000%					
5	General Excise Tax Rate	4.439%					
6	Marital Status**	1					
7	Firm Risk Level***	2					
8	Personal Ordinary Income		\$40,000	\$40,000	\$40,000	\$40,000	\$40,000
9	Personal Capital Gains Income		\$50,000	\$50,000	\$50,000	\$50,000	\$50,000
10							
11							
12	<b>INCOME STATEMENT</b>	<b>Yr 0</b>	<b>Yr 1</b>	<b>Yr 2</b>	<b>Yr 3</b>	<b>Yr 4</b>	<b>Yr 5</b>
13							
14	Product Sales with COGS		300,000	325,000	295,000	300,000	600,000
15	Other Sales without COGS		50,000	50,000	50,000	50,000	50,000
16	<b>Total Sales</b>		<b>350,000</b>	<b>375,000</b>	<b>345,000</b>	<b>350,000</b>	<b>650,000</b>
17	General Excise Tax		15,535	16,645	15,313	15,535	28,851
18	Cost of Goods Sold		120,000	130,000	118,000	120,000	240,000
19	Bank and Merchant Fees		15,000	15,000	15,000	15,000	15,000
20	Labor		30,000	30,000	30,000	30,000	60,000
21	Employee Benefits		5,000	5,000	5,000	5,000	10,000
22	Advertising		10,000	10,000	8,000	10,000	10,000
23	Rent		40,000	40,000	40,000	40,000	40,000
24	Utilities		5,000	2,000	5,000	5,000	5,000
25	Expense 5		0	0	0	0	0
26	Current Year Section 179 Purchases		20,000	0	20,000	0	0
27	Depreciation MACRS 3YR		9,900	13,500	4,500	2,100	0
28	Depreciation SL 5YR		8,000	8,000	8,000	8,000	8,000
29	Depreciation MACRS 5YR		12,000	19,200	11,400	7,200	6,600
30	Depreciation SL 39 Year Real Estate		2,564	2,564	2,564	2,564	2,564
31	<b>Total Expenses</b>		<b>292,999</b>	<b>291,909</b>	<b>282,777</b>	<b>260,399</b>	<b>426,015</b>
32	<b>EBIT</b>		<b>57,001</b>	<b>83,091</b>	<b>62,223</b>	<b>89,601</b>	<b>223,985</b>
33	Interest		7,200	9,900	7,500	9,300	5,400
34	<b>EBT</b>		<b>49,801</b>	<b>73,191</b>	<b>54,723</b>	<b>80,301</b>	<b>218,585</b>
35	Tax		6,118	14,465	6,863	15,979	68,946
36	<b>Net Income</b>		<b>43,683</b>	<b>58,726</b>	<b>47,860</b>	<b>64,322</b>	<b>149,639</b>

*This table shows the input variables and Income Statement.*

Table 3F: Input Variables and Income Statement (Formulae Display)

	A	B	C	D	E	F	G
1	<b>INPUT VARIABLES</b>						
2							
3	State Tax Relative to Fed Tax*	0.25					
4	Cost of Goods Sold as a % of Sales	0.4					
5	General Excise Tax Rate	0.044386					
6	Marital Status**	1					
7	Firm Risk Level***	2					
8	Personal Ordinary Income		40000	40000	40000	40000	40000
9	Personal Capital Gains Income		50000	50000	50000	50000	50000
10							
11							
12	<b>INCOME STATEMENT</b>	<b>Yr 0</b>	<b>Yr 1</b>	<b>Yr 2</b>	<b>Yr 3</b>	<b>Yr 4</b>	<b>Yr 5</b>
13							
14	Product Sales with COGS	300000	325000	295000	300000	600000	
15	Other Sales without COGS	50000	50000	50000	50000	50000	
16	Total Sales	=SUM(C14:C15)	=SUM(D14:D15)	=SUM(E14:E15)	=SUM(F14:F15)	=SUM(G14:G15)	
17	General Excise Tax	=C16*\$B\$5	=D16*\$B\$5	=E16*\$B\$5	=F16*\$B\$5	=G16*\$B\$5	
18	Cost of Goods Sold	=C14*\$B\$4	=D14*\$B\$4	=E14*\$B\$4	=F14*\$B\$4	=G14*\$B\$4	
19	Bank and Merchant Fees	15000	15000	15000	15000	15000	
20	Labor	30000	30000	30000	30000	60000	
21	Employee Benefits	5000	5000	5000	5000	10000	
22	Advertising	10000	10000	8000	10000	10000	
23	Rent	40000	40000	40000	40000	40000	
24	Utilities	5000	2000	5000	5000	5000	
25	Expense 5	0	0	0	0	0	
26	Current Year Section 179 Purchases	20000	0	20000	0	0	
27	Depreciation MACRS 3YR	=DP!D7	=DP!D8	=DP!D9	=DP!D10	=DP!D11	
28	Depreciation SL 5YR	=DP!I7	=DP!I8	=DP!I9	=DP!I10	=DP!I11	
29	Depreciation MACRS 5YR	=DP!N7	=DP!N8	=DP!N9	=DP!N10	=DP!N11	
30	Depreciation SL 39 Year Real Estate	=DP!S7	=DP!S8	=DP!S9	=DP!S10	=DP!S11	
31	Total Expenses	=SUM(C17:C30)	=SUM(D17:D30)	=SUM(E17:E30)	=SUM(F17:F30)	=SUM(G17:G30)	
32	EBIT	=C16-C31	=D16-D31	=E16-E31	=F16-F31	=G16-G31	
33	Interest	*1	*2	*3	*4	*5	
34	EBT	=C32-C33	=D32-D33	=E32-E33	=F32-F33	=G32-G33	
35	Tax	*6	*7	*8	*9	*10	
36	Net Income	=C34-C35	=D34-D35	=E34-E35	=F34-F35	=G34-G35	

This table shows the formulae display for input variables and the income statement. The spreadsheet automatically computes bolded items. Users enter data for their company in plain text cells. \*1=(B100=B101+B108)\*CC!\$D\$57, \*2=(C100+C101+C108)\*CC!\$D\$57, \*3=(D100+D101+D108)\*CC!\$D\$57, \*4=(E100+E101+E108)\*CC!\$D\$57, \*5=(F100+F101+F108)\*CC!\$D\$57.  
 \*6 = =IF(\$B\$6=1,TaxC!B64,IF(\$B\$6=2,TaxC!B65,IF(\$B\$6=3,TaxC!B66,IF(\$B\$6=4,TaxC!B67))) \*TaxC!B69,  
 \*7 =IF(\$B\$6=1,TaxC!C64,IF(\$B\$6=2,TaxC!C65,IF(\$B\$6=3,TaxC!C66,IF(\$B\$6=4,TaxC!C67))) \*TaxC!C69,  
 \*8 =IF(\$B\$6=1,TaxC!D64,IF(\$B\$6=2,TaxC!D65,IF(\$B\$6=3,TaxC!D66,IF(\$B\$6=4,TaxC!D67))) \*TaxC!D69,  
 \*9 =IF(\$B\$6=1,TaxC!E64,IF(\$B\$6=2,TaxC!E65,IF(\$B\$6=3,TaxC!E66,IF(\$B\$6=4,TaxC!E67))) \*TaxC!E69,  
 \*10 =IF(\$B\$6=1,TaxC!F64,IF(\$B\$6=2,TaxC!F65,IF(\$B\$6=3,TaxC!F66,IF(\$B\$6=4,TaxC!F67))) \*TaxC!F69-TaxC!G98.

Users must also enter their personal non-business income. Users fill in two classifications of personal income, personal ordinary income and personal capital gains income. Space is provided to report these estimates in each of the 5-years examined. Distinguishing between the two income types improves the precision of tax calculations.

Table 4 presents retained earnings and cash flow statements. These statements remain identical to those presented in Jalbert (2019). Users need only enter the dividend amount paid in each year in Row 41. Thus, additional discussion is omitted.

Table 4: Retained Earnings Statement and Cash Flow Statement

	A	B	C	D	E	F	G
38	STATEMENT OF RET. EARNINGS	Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
39	Old Retained Earnings		0	43,683	52,409	50,269	39,591
40	Net Income		43,683	58,726	47,860	64,322	149,639
41	Dividends		0	50,000	50,000	75,000	100,000
42	New Retained Earnings		43,683	52,409	50,269	39,591	89,229
43							
44	STATEMENT OF CASH FLOWS	Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
45	Net Income		43,683	58,726	47,860	64,322	149,639
46	Depreciation		32,464	43,264	26,464	19,864	17,164
47	<u>Increases in Liabilities</u>						
48	Short Term Bank Loans		-5,000	-5,000	35,000	-25,000	0
49	Credit Card Loans		25,000	-25,000	0	-30,000	0
50	Current Liabilities 3		0	0	0	0	0
51	Current Liabilities 4		0	0	0	0	0
52	Current Liabilities 5		0	0	0	0	0
53	Current Liabilities 6		0	0	0	0	0
54	Current Liabilities 7		0	0	0	0	0
55	Long Term Loans 1		25,000	-10,000	-5,000	-10,000	-5,000
56	Long Term Loans 2		0	-10,000	-10,000	-10,000	-10,000
57	Total Sources of Cash		121,147	51,990	94,324	9,186	151,803
58	<u>Increases in Assets</u>						
59	Inventory		0	0	0	0	0
60	Deposits		-10,000	20,000	20,000	-50,000	20,000
61	Asset 4		0	0	0	0	0
62	Asset 5		0	0	0	0	0
63	Asset 6		0	0	0	0	0
64	Asset 7		0	0	0	0	0
65	Non Depreciable LT Assets (Land)		0	0	0	0	0
66	Total Uses of Cash in Operations		-10,000	20,000	20,000	-50,000	20,000
67	<u>Cash Paid to and Received from Stockholders</u>						
68	Increase in Common Stock		7,000	0	0	0	0
69	Dividends		0	50,000	50,000	75,000	100,000
70	= Change in Cash Position		138,147	-18,010	24,324	-15,814	31,803
71							
72	Old Cash		20,000	158,147	140,137	164,461	148,647
73	Plus Change in Cash Position		138,147	-18,010	24,324	-15,814	31,803
74	New Cash Balance		158,147	140,137	164,461	148,647	180,450

This table shows the statements of retained earnings and cash flows. The statement of cash flows requires no user inputs. Users enter dividends paid in row 41 of the statement of retained earnings.

Table 4F: Statement of Retained Earnings and Statement of Cash Flows (Formulae Display)

	A	B	C	D	E	F	G
38	STATEMENT OF RET. EARNINGS	Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
39	Old Retained Earnings		=B112	=C112	=D112	=E112	=F112
40	Net Income		=C36	=D36	=E36	=F36	=G36
41	Dividends		0	50000	50000	75000	100000
42	New Retained Earnings		=C39+C40-C41	=D39+D40-D41	=E39+E40-E41	=F39+F40-F41	=G39+G40-G41
43							
44	STATEMENT OF CASH FLOWS	Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
45	Net Income		=C36	=D36	=E36	=F36	=G36
46	Depreciation		=SUM(C27:C30)	=SUM(D27:D30)	=SUM(E27:E30)	=SUM(F27:F30)	=SUM(G27:G30)
47	<u>Increases in Liabilities</u>						
48	=A100		=C100-B100	=D100-C100	=E100-D100	=F100-E100	=G100-F100
49	=A101		=C101-B101	=D101-C101	=E101-D101	=F101-E101	=G101-F101
50	=A102		=C102-B102	=D102-C102	=E102-D102	=F102-E102	=G102-F102
51	=A103		=C103-B103	=D103-C103	=E103-D103	=F103-E103	=G103-F103
52	=A104		=C104-B104	=D104-C104	=E104-D104	=F104-E104	=G104-F104
53	=A105		=C105-B105	=D105-C105	=E105-D105	=F105-E105	=G105-F105
54	=A106		=C106-B106	=D106-C106	=E106-D106	=F106-E106	=G106-F106
55	=A108		=C108-B108	=D108-C108	=E108-D108	=F108-E108	=G108-F108
56	=A109		=C109-B109	=D109-C109	=E109-D109	=F109-E109	=G109-F109
57	Total Sources of Cash		=SUM(C45:C56)	=SUM(D45:D56)	=SUM(E45:E56)	=SUM(F45:F56)	=SUM(G45:G56)
58	<u>Increases in Assets</u>						
59	=A79		=C79-B79	=D79-C79	=E79-D79	=F79-E79	=G79-F79
60	=A80		=C80-B80	=D80-C80	=E80-D80	=F80-E80	=G80-F80
61	=A81		=C81-B81	=D81-C81	=E81-D81	=F81-E81	=G81-F81
62	=A82		=C82-B82	=D82-C82	=E82-D82	=F82-E82	=G82-F82
63	=A83		=C83-B83	=D83-C83	=E83-D83	=F83-E83	=G83-F83
64	=A84		=C84-B84	=D84-C84	=E84-D84	=F84-E84	=G84-F84
65	=A86		=C86-B86	=D86-C86	=E86-D86	=F86-E86	=G86-F86
66	Total Uses of Cash in Operations		=SUM(C59:C65)	=SUM(D59:D65)	=SUM(E59:E65)	=SUM(F59:F65)	=SUM(G59:G65)
67	<u>Cash Paid to &amp; Rec. from Stkholders</u>						
68	Increase in Common Stock		=C111-B111	=D111-C111	=E111-D111	=F111-E111	=G111-F111
69	Dividends		=C41	=D41	=E41	=F41	=G41
70	= Change in Cash Position		*11	*12	*13	*14	*15
71							
72	Old Cash		=B78	=C78	=D78	=E78	=F78
73	Plus Change in Cash Position		=C70	=D70	=E70	=F70	=G70
74	New Cash Balance		=SUM(C72+C73)	=SUM(D72+D73)	=SUM(E72+E73)	=SUM(F72+F73)	=SUM(G72+G73)

This table provides the formulae display for the Retained Earnings and Cash Flow Statements. Worksheet 'SI' contains all computations except depreciation. Worksheet 'DP' presents supporting depreciation calculations. The spreadsheet automatically computes bolded items. Users enter data for their company in plain text cells. \*11 =sum(C57-C66+C68-C69), \*12 =sum(D57-D66+D68-D69), \*13 =sum(E57-E66+E68-E69), \*14 =sum(F57-F66+F68-F69), \*15 =sum(G57-G66+G68-G69).

Users enter information specific to their business in the balance sheet shown in Table 5 (Table 5F). The balance sheet remains substantially identical to the Jalbert (2019) version. Users should edit unbolded row headings to reflect asset and liability accounts relevant for the business being examined (Cells A79-A84). Next, users enter initial balance sheet data in the column labeled Yr. 0 (Cells B78-B114). Users select depreciation method by entering purchases in the appropriate initial balance sheet row. When instructing students on using the template, the instructor asks student to identify: 1.) Which assets will the firm require?, and 2.) How will the firm finance the purchase of the items? Upon correctly completed the initial balance sheet, users modify unbolded balance sheet items in subsequent years to reflect changes the accounts, such as paying off a loan. The template's beauty lies in its ability to reflect any changes made as necessary throughout the entire five years of statements. Moreover, the balance sheet includes error messages that alert users to incorrect entries and directs them to make corrections. Specifically, an error message appears if assets do not equal liabilities plus equity in the initial balance sheet. A separate error appears if users include a non-positive number for common stock. Interested readers should refer to Jalbert (2017) and Jalbert (2019) for additional balance sheet discussion.

Table 5: Balance Sheet

	A	B	C	D	E	F	G
76	<b>BALANCE SHEET</b>	<b>Yr 0</b>	<b>Yr 1</b>	<b>Yr 2</b>	<b>Yr 3</b>	<b>Yr 4</b>	<b>Yr 5</b>
77	<b>Assets</b>						
78	Cash	20,000	158,147	140,137	164,461	148,647	180,450
79	Inventory	10,000	10,000	10,000	10,000	10,000	10,000
80	Deposits	53,000	43,000	63,000	83,000	33,000	53,000
81	Asset 4	0	0	0	0	0	0
82	Asset 5	0	0	0	0	0	0
83	Asset 6	0	0	0	0	0	0
84	Asset 7	0	0	0	0	0	0
85	<b>Total Current Assets</b>	<b>83,000</b>	<b>211,147</b>	<b>213,137</b>	<b>257,461</b>	<b>191,647</b>	<b>243,450</b>
86	<b>Non Depreciable LT Assets (Land)</b>	100,000	100,000	100,000	100,000	100,000	100,000
87	<b>Long Term Asset MACRS 3YR</b>	30,000	30,000	30,000	30,000	30,000	30,000
88	<b>Accumulated Depreciation 3YR</b>		9,900	23,400	27,900	30,000	30,000
89	<b>Long Term Asset SL 5YR</b>	40,000	40,000	40,000	40,000	40,000	40,000
90	<b>Accumulated Depreciation SL 5YR</b>		8,000	16,000	24,000	32,000	40,000
91	<b>Long Term Asset MACRS 5YR</b>	60,000	60,000	60,000	60,000	60,000	60,000
92	<b>Accumulated Depreciation MACRS 5 YR</b>		12,000	31,200	42,600	49,800	56,400
93	<b>Real Estate 39 Years</b>	100,000	100,000	100,000	100,000	100,000	100,000
94	<b>Accumulated Depreciation RE 39 YR SL</b>		2,564	5,128	7,692	10,256	12,821
95	<b>Total Depreciable Fixed Assets</b>	<b>230,000</b>	<b>230,000</b>	<b>230,000</b>	<b>230,000</b>	<b>230,000</b>	<b>230,000</b>
96	<b>Total Accumulated Depreciation</b>	<b>0</b>	<b>32,464</b>	<b>75,728</b>	<b>102,192</b>	<b>122,056</b>	<b>139,221</b>
97	<b>Total Assets</b>	<b>413,000</b>	<b>508,683</b>	<b>467,409</b>	<b>485,269</b>	<b>399,591</b>	<b>434,229</b>
98							
99	<b>Liabilities and Equity</b>						
100	Short Term Bank Loans	25,000	20,000	15,000	50,000	25,000	25,000
101	Credit Card Loans	50,000	75,000	50,000	50,000	20,000	20,000
102	Current Liabilities 3	0	0	0	0	0	0
103	Current Liabilities 4	0	0	0	0	0	0
104	Current Liabilities 5	0	0	0	0	0	0
105	Current Liabilities 6	0	0	0	0	0	0
106	Current Liabilities 7	0	0	0	0	0	0
107	<b>Total Current Liabilities</b>	<b>75,000</b>	<b>95,000</b>	<b>65,000</b>	<b>100,000</b>	<b>45,000</b>	<b>45,000</b>
108	Long Term Loans 1	45,000	70,000	60,000	55,000	45,000	40,000
109	Long Term Loans 2	100,000	100,000	90,000	80,000	70,000	60,000
110	<b>Total Liabilities</b>	<b>220,000</b>	<b>265,000</b>	<b>215,000</b>	<b>235,000</b>	<b>160,000</b>	<b>145,000</b>
111	Common Stock	193,000	200,000	200,000	200,000	200,000	200,000
112	Retained Earnings	0	43,683	52,409	50,269	39,591	89,229
113	<b>Total Equity</b>	<b>193,000</b>	<b>243,683</b>	<b>252,409</b>	<b>250,269</b>	<b>239,591</b>	<b>289,229</b>
114	<b>Total Liabilities and Equity</b>	<b>413,000</b>	<b>508,683</b>	<b>467,409</b>	<b>485,269</b>	<b>399,591</b>	<b>434,229</b>
115	<b>Cumulative Section 179 Purchases</b>		<b>20,000</b>	<b>20,000</b>	<b>40,000</b>	<b>40,000</b>	<b>40,000</b>

*This table shows the balance sheet template.*

Table 5F: Balance Sheet (Formulae Display)

	A	B	C	D	E	F	G
76	BALANCE SHT	Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
77	<b>Assets</b>						
78	Cash	20000	=C74	=D74	=E74	=F74	=G74
79	Inventory	10000	10000	10000	10000	10000	10000
80	Deposits	53000	43000	63000	83000	33000	53000
81	Asset 4	0	0	0	0	0	0
82	Asset 5	0	0	0	0	0	0
83	Asset 6	0	0	0	0	0	0
84	Asset 7	0	0	0	0	0	0
85	<b>Total C.A.</b>	=SUM(B78:B84)	=SUM(C78:C84)	=SUM(D78:D84)	=SUM(E78:E84)	=SUM(F78:F84)	=SUM(G78:G84)
86	<b>Non Depr. L.T.A</b>	100000	=B86	=C86	=D86	=E86	=F86
87	<b>L.T. MACRS 3</b>	30000	=B87	=C87	=D87	=E87	=F87
88	<b>AD 3</b>		=B88+C27	=C88+D27	=D88+E27	=E88+F27	=F88+G27
89	<b>L.T. SL 5</b>	40000	=B89	=C89	=D89	=E89	=F89
90	<b>AD SL 5</b>		=B90+C28	=C90+D28	=D90+E28	=E90+F28	=F90+G28
91	<b>L.T.MACRS 5</b>	60000	=B91	=C91	=D91	=E91	=F91
92	<b>A.D. MACRS 5</b>		=C29+B92	=D29+C92	=E29+D92	=F29+E92	=G29+F92
93	<b>R.E. 39</b>	100000	=B93	=C93	=D93	=E93	=F93
94	<b>AD RE 39</b>		=B94+C30	=C94+D30	=D94+E30	=E94+F30	=F94+G30
95	<b>Tot Dep F.A.</b>	*16	*17	*18	*19	*20	*21
96	<b>Total Acc Dep</b>	*22	*23	*24	*25	*26	*27
97	<b>Total Assets</b>	<b>*28</b>	<b>*29</b>	<b>*30</b>	<b>*31</b>	<b>*31</b>	<b>*33</b>
98							
99	<b>Liab. &amp; Eq.</b>						
100	S.T. Loans	25000	20000	15000	50000	25000	25000
101	C Card Loans	50000	75000	50000	50000	20000	20000
102	CL 3	0	0	0	0	0	0
103	CL 4	0	0	0	0	0	0
104	CL 5	0	0	0	0	0	0
105	CL 6	0	0	0	0	0	0
106	CL 7	0	0	0	0	0	0
107	<b>Total C Lib</b>	=SUM(B100:B106)	=SUM(C100:C106)	=SUM(D100:D106)	=SUM(E100:E106)	=SUM(F100:F106)	=SUM(G100:G106)
108	L.T. Loans 1	45000	70000	60000	55000	45000	40000
109	L.T. Loans 2	100000	100000	90000	80000	70000	60000
110	<b>Total Liab.</b>	<b>*34</b>	<b>*35</b>	<b>*36</b>	<b>*37</b>	<b>*38</b>	<b>*39</b>
111	<b>Comm Stock</b>	193000	200000	200000	200000	200000	200000
112	<b>Ret. Ern.</b>	0	=C42	=D42	=E42	=F42	=G42
113	<b>Total Equity</b>	=SUM(B111:B112)	=SUM(C111:C112)	=SUM(D111:D112)	=SUM(E111:E112)	=SUM(F111:F112)	=SUM(G111:G112)
114	<b>Total L &amp; E</b>	=SUM(B110+B113)	=SUM(C110+C113)	=SUM(D110+D113)	=SUM(E110+E113)	=SUM(F110+F113)	=SUM(G110+G113)
115	<b>Cum Sec 179</b>		=C26	=C115+D26	=D115+E26	=E115+F26	=F115+G26
116	<b>*40</b>	<b>*41</b>	<b>*42</b>	<b>*43</b>	<b>*44</b>	<b>*45</b>	<b>*46</b>

This table shows formulae used in the balance sheet. Worksheet 'SI' contains all computations except depreciation and error messages. Worksheet 'DP' contains depreciation computations. Worksheet 'EM', contains error messages. Users enter data for their firm in items not bolded. The spreadsheet computes bolded items. \*16 = (B87+B89+B91+B93), \*17 = (C87+C89+C91+C93), \*18 = (D87+D89+D91+D93), \*19 = (E87+E89+E91+E93), \*20 = (F87+F89+F91+F93), \*21 = (G87+G89+G91+G93), \*22 = (B88+B90+B92+B94), \*23 = (C88+C90+C92+C94), \*24 = (D88+D90+D92+D94), \*25 = (E88+E90+E92+E94), \*26 = (F88+F90+F92+F94), \*27 = (G88+G90+G92+G94), \*28 = sum(B85+B86+B87-B88+B89-B90+B91-B92+B93-B94), \*29 = sum(C85+C86+C87-C88+C89-C90+C91-C92+C93-C94), \*30 = sum(D85+D86+D87-D88+D89-D90+D91-D92+D93-D94), \*31 = sum(E85+E86+E87-E88+E89-E90+E91-E92+E93-E94), \*32 = sum(F85+F86+F87-F88+F89-F90+F91-F92+F93-F94), \*33 = sum(G85+G86+G87-G88+G89-G90+G91-G92+G93-B94), \*34 = sum(B107+B108+B109), \*35 = sum(C107+C108+C109), \*36 = sum(D107+D108+D109), \*37 = sum(E107+E108+E109), \*38 = sum(F107+F108+F109), \*39 = sum(G107+G108+G109), \*35 = if(B97=B114,"",EM!\$A\$5), \*36 = if(B111>0,"",EM!\$A\$5), \*37 = if(C111>0,"",EM!\$A\$5), \*38 = if(D111>0,"",EM!\$A\$5), \*39 = if(E111>0,"",EM!\$A\$5), \*40 = if(B97=B114,"",EM!\$A\$1), \*41 = if(B111>0,"",EM!\$A\$5), \*42 = if(C111>0,"",EM!\$A\$5), \*43 = if(D111>0,"",EM!\$A\$5), \*44 = if(E111>0,"",EM!\$A\$5), \*45 = if(F111>0,"",EM!\$A\$5), \*46 = if(G111>0,"",EM!\$A\$5).

Table 6 (Table 6F) provides the capital budget. This revised template includes minimal changes to the capital budget. As with previous versions of the template, information for the capital budget primarily transfers from other statements. The only revision here involves now referencing Worksheet 'TaxC to calculate taxes due on the disposal of capital purchases. Users report the value of non-expensed owner labor on row 145. This entry incorporates the opportunity cost of uncompensated work into the capital budget decision. Users enter the year 5 terminal cash flows for all non-cash capital assets. The template

automatically enters the terminal cash amount. Further, the template calculates taxes due on the disposal of assets. The analysis assumes full payment of all liabilities at the end of year 5. Net Present Value calculations use the cost of equity to discount cash flows in a manner analogous to Jalbert (2019).

Table 6: Capital Budget Analysis

	A	B	C	D	E	F	G
	CAPITAL BUDGET ANALYSIS	Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
117							
118							
119	Product Sales with COGS		300,000	325,000	295,000	300,000	600,000
120	Other Sales without COGS		50,000	50,000	50,000	50,000	50,000
121	Total Sales		350,000	375,000	345,000	350,000	650,000
122	General Excise Tax		15,535	16,645	15,313	15,535	28,851
123	Cost of Goods Sold		120,000	130,000	118,000	120,000	240,000
124	Bank and Merchant Fees		15,000	15,000	15,000	15,000	15,000
125	Labor		30,000	30,000	30,000	30,000	60,000
126	Employee Benefits		5,000	5,000	5,000	5,000	10,000
127	Advertising		10,000	10,000	8,000	10,000	10,000
128	Rent		40,000	40,000	40,000	40,000	40,000
129	Utilities		5,000	2,000	5,000	5,000	5,000
130	Expense 5		0	0	0	0	0
131	Current Year Section 179 Purchases		20,000	0	20,000	0	0
132	Depreciation MACRS 3YR		9,900	13,500	4,500	2,100	0
133	Depreciation SL 5YR		8,000	8,000	8,000	8,000	8,000
134	Depreciation MACRS 5YR		12,000	19,200	11,400	7,200	6,600
135	Depreciation SL 39 Year Real Estate		2,564	2,564	2,564	2,564	2,564
136	EBIT		57,001	83,091	62,223	89,601	223,985
137	Interest		7,200	9,900	7,500	9,300	5,400
138	EBT		49,801	73,191	54,723	80,301	218,585
139	Tax		6,118	14,465	6,863	15,979	68,946
140	Net Income		43,683	58,726	47,860	64,322	149,639
141	Depreciation MACRS 3YR		9,900	13,500	4,500	2,100	0
142	Depreciation SL 5YR		8,000	8,000	8,000	8,000	8,000
143	Depreciation MACRS 5YR		12,000	19,200	11,400	7,200	6,600
144	Depreciation SL 39 Year Real Estate		2,564	2,564	2,564	2,564	2,564
145	Non Expensed Owner Labor		20,000	20,000	20,000	20,000	20,000
146	Total Operating Cash Flows		56,147	81,990	54,324	64,186	146,803

Table 6: Capital Budget Analysis (Continued)

	A	B	C	D	E	F	G
148	<b>CAPITAL BUDGET (CONTINUED)</b>	<b>Yr 0</b>	<b>Yr 1</b>	<b>Yr 2</b>	<b>Yr 3</b>	<b>Yr 4</b>	<b>Yr 5</b>
149	Cash	-20,000					
150	Inventory	-10,000					
151	Deposits	-53,000					
152	Asset 4	0					
153	Asset 5	0					
154	Asset 6	0					
155	Asset 7	0					
156	Total Current Assets	-83,000					
157	Non Depreciable LT Assets (Land)	100,000					
158	Long Term Asset MACRS 3YR	-30,000					
159	Long Term Asset SL 5YR	-40,000					
160	Long Term Asset MACRS 5YR	-60,000					
161	Real Estate 39 Years	-100,000					
162	Cash Flow	-413,000					
163							
164	Cash						20,000
165	Inventory						10,000
166	Deposits						53,000
167	Asset 4						0
168	Asset 5						0
169	Asset 6						0
170	Asset 7						0
171	Sale of 179 Expense Election Assets						20,000
172	Non Depreciable LT Assets (Land)						150,000
173	Long Term Asset MACRS 3YR						30,000
174	Long Term Asset SL 5YR						25,000
175	Long Term Asset MACRS 5YR						50,000
176	Real Estate 39 Years						90,000
177	Tax on Gain on Sale of Current Assets						0
178	Tax on Sale of 179 Expense Election Assets						3,000
179	Tx on Sale of Non Depreciable LT Assets (Land)						7,500
180	Tax on Long Term Asset MACRS 3YR						4,500
181	Tax on Long Term Asset SL 5YR						3,750
182	Tax on Long Term Asset MACRS 5 YR						3,210
183	Tax on Real Estate Sale						423
184	Total Terminal Cash Flows						425,617
185	Total Cash Flow	-413,000	56,147	81,990	54,324	64,186	572,420
186							
187	NPV	145,885					
188	IRR	0.1872					

*This table shows the capital budget.*

Table 6F: Capital Budget Analysis (Formulae Display)

	A	B	C	D	E	F	G
117	CAP. BUDGET	Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
118							
119	=A14		=C14	=D14	=E14	=F14	=G14
120	=A15		=C15	=D15	=E15	=F15	=G15
121	=A16		=C16	=D16	=E16	=F16	=G16
122	=A17		=C17	=D17	=E17	=F17	=G17
123	=A18		=C18	=D18	=E18	=F18	=G18
124	=A19		=C19	=D19	=E19	=F19	=G19
125	=A20		=C20	=D20	=E20	=F20	=G20
126	=A21		=C21	=D21	=E21	=F21	=G21
127	=A22		=C22	=D22	=E22	=F22	=G22
128	=A23		=C23	=D23	=E23	=F23	=G23
129	=A24		=C24	=D24	=E24	=F24	=G24
130	=A25		=C25	=D25	=E25	=F25	=G25
131	=A26		=C26	=D26	=E26	=F26	=G26
132	=A27		=C27	=D27	=E27	=F27	=G27
133	=A28		=C28	=D28	=E28	=F28	=G28
134	=A29		=C29	=D29	=E29	=F29	=G29
135	=A30		=C30	=D30	=E30	=F30	=G30
136	=A32		=C32	=D32	=E32	=F32	=G32
137	=A33		=C33	=D33	=E33	=F33	=G33
138	=A34		=C34	=D34	=E34	=F34	=G34
139	=A35		=C35	=D35	=E35	=F35	=G35
140	=A36		=C36	=D36	=E36	=F36	=G36
141	=A132		=C132	=D132	=E132	=F132	=G132
142	=A133		=C133	=D133	=E133	=F133	=G133
143	=A134		=C134	=D134	=E134	=F134	=G134
144	=A135		=C135	=D135	=E135	=F135	=G135
145	N.E. Labor		20000	20000	20000	20000	20000
146	Total Op. C.F.		*47	*48	*49	*50	*51

Table 6F: Capital Budget Analysis (Continued) (Formulae Display)

	A	B	C	D	E	F	G	H
148	CAPITAL BUD (CONT)	Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	
149	=A78	=B78						
150	=A79	=B79						
151	=A80	=B80						
152	=A81	=B81						
153	=A82	=B82						
154	=A83	=B83						
155	=A84	=B84						
156	=A85	=B85						
157	=A86	=B86						
158	=A87	=B87						
159	=A89	=B89						
160	=A91	=B91						
161	=A93	=B93						
162	Cash Flow	=B97						
163								
164	=A78						=-B149	
165	=A79						=-B150	
166	=A80						=-B151	
167	=A81						=-B152	
168	=A82						=-B153	
169	=A83						=-B154	
170	=A84						=-B155	
171	Sale of 179						20000	*54
172	=A157						150000	*55
173	=A158						30000	*56
174	=A159						25000	*57
175	=A160						50000	*58
176	=A161						90000	*59
177	Tax on Gain C.A.						*52	
178	Tax on Sale of 179						=TaxC!G92	
179	Tx on Sale of N.D.						=TaxC!G93	
180	Tax on MACRS 3						=TaxC!G94	
181	Tax on SL 5						=TaxC!G95	
182	Tax on MACRS 5						=TaxC!G96	
183	Tax on R.E. Sale						=TaxC!G97	
184	Total Term C.F.						*53	
185	Total C.F.	=B162	=C146	=D146	=E146	=F146	=SUM(G146+G184)	
186								
187	NPV	*60						
188	IRR	*61						

This table shows formulae for the Capital Budget. Worksheet 'SI' contains all computations except depreciation, cost of capital and tax computations. Worksheet 'DP' contains depreciation computations. Worksheet 'CC' contains cost of capital calculations. Worksheet TaxC contains tax calculations. Users enter data for their firm in non-bolded cells. The spreadsheet computes bolded items.

\*47 =sum(C140:C144)-C145, \*48 =sum(D140:D144)-D145, \*49 =sum(E140:E144)-E145, \*50 =sum(F140:F144)-F145, \*51 =sum(G140:G144)-G145, \*52 =SUM(TaxC!G86:G91), \*53 =SUM(G164:G176)-SUM(G177:G183), \*54 =IF(AND(G171>0,G115=0,EM!A\$4,""), \*55 =IF(AND(G172>0,G86=0,EM!A4,""), \*56 =IF(AND(G173>0,B158=0,EM!A4,""), \*57 =IF(AND(G174>0,B159=0,EM!A4,""), \*58 =IF(AND(G175>0,B160=0,EM!A4,""), \*59 =IF(AND(G176>0,B161=0,EM!A4,""), \*60 =NPV(CC!D58,C185:G185)+B185, \*61 =IRR(B185:G185).

Table 7 (Table 7F) shows calculated variables, firm values and calculates ratios. The table begins by calculating the proportion of funds obtained from equity and debt. Next, these proportions are combined with costs of equity and debt to identify the weighted average cost of capital (WACC). Table 7 (Table 7F) valuation calculations correspond directly to those in Jalbert (2019). Nevertheless, due to the analysis complexity this document provides a brief discussion of the calculations. The calculations require no user entries. The computations incorporate previously entered information to complete the calculations. The expected EBIT for valuation,  $E(EBIT)$ , equals the standard EBIT reduced by non-expensed owner labor.

The analysis utilizes variations on valuation approaches of Jalbert (2002) and Miller (1977) which estimate the value of firms subject to the pass-through and double taxation systems respectively. While the template provides both figures, users should focus on the approach relevant for the organizational firm utilized.

The valuation approach used here assigns value as the maximum of going concern or liquidation value where liquidation value equals balance sheet common equity. The note contains selected formulas. A full list of formulae utilized is available from the author.

Table 7: Calculated Variables, Firm Value and Ratio Analysis

	A	B	C	D	E	F	G	H
190	<b>CALCULATED VARIABLES</b>							
191								
192	Proportion of Funds From Equity	0.4673						
193	Proportion of Funds from Debt	0.5327						
194	Cost of Capital (WACC)	0.0734						
195								
196	<b>COMPUTATION OF FIRM VALUE</b>	<b>Yr 0</b>	<b>Yr 1</b>	<b>Yr 2</b>	<b>Yr 3</b>	<b>Yr 4</b>	<b>Yr 5</b>	
197								
198	EBIT		57,001	83,091	62,223	89,601	223,985	
199	Unexpensed Value of Owners Time		20,000	20,000	20,000	20,000	20,000	
200	EBIT for Valuation		37,001	63,091	42,223	69,601	203,985	
201								
202	<b>Firm Value: Pass-Through Taxation (Jalbert Method)</b>							
203								
204	Value of Unlevered Firm		314,507	536,275	358,893	591,607	1,733,873	
205	Value of Levered Firm		312,673	531,663	356,654	586,740	1,726,660	
206	Gain from Leverage		-1,834	-4,612	-2,239	-4,867	-7,212	
207								
208	<b>Firm Value: Double Taxation (Miller Method)</b>							
209								
210	Value of Unlevered Firm		248,460	423,657	283,526	467,369	1,369,759	
211	Value of Levered Firm		268,047	448,498	303,599	490,170	1,378,612	
212	Gain from Leverage		19,586	24,841	20,073	22,800	8,853	
213								
214	<b>COMPUTATION OF FINANCIAL RATIOS</b>							
215		<b>Yr 0</b>	<b>Yr 1</b>	<b>Yr 2</b>	<b>Yr 3</b>	<b>Yr 4</b>	<b>Yr 5</b>	<b>RMA</b>
216	Total Asset Turnover		0.688	0.802	0.711	0.876	1.497	x
217	Return on Assets		0.086	0.126	0.099	0.161	0.345	x
218	Return on Equity		0.179	0.233	0.191	0.268	0.517	x
219	Debt to Equity	1.140	1.087	0.852	0.939	0.668	0.501	x
220	Debt to Assets	0.533	0.521	0.460	0.484	0.400	0.334	x
221	Current Ratio	1.107	2.223	3.279	2.575	4.259	5.410	x
222	Dividend Payout Ratio		0.000	0.851	1.045	1.166	0.668	x

This table shows firm value and financial ratio calculations. Valuation calculations include estimates for both pass-through and double taxation firms.

Table 7F: Calculated Variables, Firm Value and Ratio Analysis (Formulae Display)

	A	B	C	D	E	F	G	H
196	COMP OF FIRM VAL	Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	
197								
198	EBIT		=C32	=D32	=E32	=F32	=G32	
199	Unexp Value of Labor		=C145	=D145	=E145	=F145	=G145	
200	EBIT for Valuation		=C198-C199	=D198-D199	=E198-E199	=F198-F199	=G198-G199	
201								
202	<b>Firm Value: P.T.</b>							
203								
204	Value of Unlev. Firm		*63	*64	*65	*66	*67	
205	Value of Levered Firm		*68	*69	*70	*71	*72	
206	Gain from Leverage		=C205-C204	=D205-D204	=E205-E204	=F205-F204	=G205-G204	
207								
208	<b>Firm Value: D.T.</b>							
209								
210	Value of Unlev. Firm		*73	*74	*75	*76	*77	
211	Value of Levered Firm		*78	*79	*80	*81	*82	
212	Gain from Leverage		=C211-C210	=D211-D210	=E211-E210	=F211-F210	=G211-G210	
213								
214	COMP OF RATIOS							
215		Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	<b>RMA</b>
216	Total Asset Turnover		=C16/C97	=D16/D97	=E16/E97	=F16/F97	=G16/G97	x
217	Return on Assets		=C36/C97	=D36/D97	=E36/E97	=F36/F97	=G36/G97	x
218	Return on Equity		=C36/C113	=D36/D113	=E36/E113	=F36/F113	=G36/G113	x
219	Debt to Equity	=B110/B113	=C110/C113	=D110/D113	=E110/E113	=F110/F113	=G110/G113	x
220	Debt to Assets	=B110/B97	=C110/C97	=D110/D97	=E110/E97	=F110/F97	=G110/G97	x
221	Current Ratio	=B85/B107	=C85/C107	=D85/D107	=E85/E107	=F85/F107	=G85/G107	x
222	Dividend Payout Ratio		=C69/C36	=D69/D36	=E69/E36	=F69/F36	=G69/G36	x

This table shows formulae for firm value and financial ratio calculations. Worksheet 'SI' contains all calculations except depreciation and tax calculations. Worksheet 'DP' contains depreciation computations. Worksheet TaxC contains tax calculations. Users enter data for their firm in cells not bolded. The spreadsheet calculates bolded items. \*63 =MAX(SUM(C200\*(1-TaxC!\$B\$79)/CC!\$D\$58),C113), \*68 =MAX(C204+(C33\*(1-TaxC!\$B\$80)-(1-TaxC!\$B\$79))/CC!\$D\$57,C113), \*73 =MAX(C200\*((1-TaxC!\$B\$81)\*(1-TaxC!\$B\$79))/CC!\$D\$58,C113), \*78 =MAX(C210+(C33\*(1-TaxC!\$B\$80)-(1-TaxC!\$B\$81)\*(1-TaxC!\$B\$79))/CC!\$D\$57,C113).

Equations 1 and 2 estimate firm valued based the Jalbert (2002) method as revised, relevant for pass-through taxation firms. Consider a firm with interest expense,  $I$ , capital gains tax rate,  $T_{PS}$ , the owners required rate of return on invested equity,  $K_E$ , a cost of borrowing money,  $K_D$ , and common equity,  $CE$ . Then Equation 1 expresses the value of a firm that does not borrow money,  $V_U$ , and Equation 2 expresses the value of a firm that does borrow money,  $V_L$  as:

$$V_U = \text{Max}\left(\frac{E(EBIT)(1 - T_{PS})}{K_E}, CE\right) \tag{1}$$

$$V_L = \text{Max}\left(\frac{E(EBIT)(1-T_{PS})}{K_E} + \frac{I[(1-T_{PB})*(1-T_{PS})]}{K_D}, CE\right) \tag{2}$$

Equations 3 and 4 utilize the work of Miller (1977) to estimate the value of levered  $V_L$  and unlevered,  $V_U$ , double taxation firms respectively, where  $T_C$  equals the corporate tax rate.

$$V_U = \text{Max}\left(\frac{E(EBIT)(1 - T_{PS})(1 - T_C)}{K_E}, CE\right) \tag{3}$$

$$V_L = Max\left(\frac{E(EBIT)(1 - T_{PS})(1 - T_C)}{K_E} + \frac{I[(1 - T_{PB})(1 - T_{PS})(1 - T_C)]}{K_D}, CE\right) \tag{4}$$

Equation 5 shows the gain from borrowing money,  $G_L$ , expressed as the difference in value between levered and unlevered values.

$$G_L = V_L - V_U \tag{5}$$

Table 7 (Table 7F) further provides automated calculations of several financial ratios. Users should obtain industry ratio levels from Risk Management Associates (RMA) Annual Statement Studies and enter the corresponding figures in Cells H216-H222. Users should compare industry averages to their calculated figures. Large difference should be scrutinized to identify potential estimation errors.

Table 8 (Table 8F), from Worksheet ‘DP, provides depreciation calculations. The worksheet gathers user-entered data from Worksheet ‘S1’ to complete the computations. Resulting calculations are incorporated back into Worksheet ‘S1.’ The ‘DP’ worksheet requires no user input. Table 9 shows worksheet ‘EM’ which contains error messages that appear throughout the template to notify users of incorrect data entries.

Table 8: Depreciation Calculations

	A	B	C	D	E	F	G	H	I
1	<b>MACRS 3 Year</b>				<b>SL 5 Year</b>				
2									
3	<u>Depreciation Taken</u>				<u>Depreciation Taken</u>				
4									
5	Year	Percentage	Cost	Depreciation	Year	Percentage	Cost	Depreciation	
6	0				0				
7	1	0.33	30,000	9,900	1	0.2	40,000	8,000	
8	2	0.45	30,000	13,500	2	0.2	40,000	8,000	
9	3	0.15	30,000	4,500	3	0.2	40,000	8,000	
10	4	0.07	30,000	2,100	4	0.2	40,000	8,000	
11	5	0	30,000	0	5	0.2	40,000	8,000	
12									
13	<b>Total Depreciation Taken</b>			<b>30,000</b>	<b>Total Depreciation Taken</b>			<b>40,000</b>	
14									
15	<u>Book Value</u>				<u>Book Value</u>				
16									
17	<b>Cost of Machine</b>			<b>30,000</b>	<b>Cost of Machine</b>			<b>40,000</b>	
18	<b>Less Depreciation Taken</b>			<b>30,000</b>	<b>Less Depreciation Taken</b>			<b>40,000</b>	
19	<b>= Book Value</b>			<b>0</b>	<b>= Book Value</b>			<b>0</b>	
20									
21	<u>Gain on Sale</u>				<u>Gain on Sale</u>				
22									
23	<b>Sales Price</b>			<b>30,000</b>	<b>Sales Price</b>			<b>25,000</b>	
24	<b>Less Book Value</b>			<b>0</b>	<b>Less Book Value</b>			<b>0</b>	
25	<b>= Gain on Sale</b>			<b>30,000</b>	<b>= Gain on Sale</b>			<b>25,000</b>	
26									
27	<u>Tax on Gain</u>				<u>Tax on Gain</u>				
28									
29	<b>Gain on Sale</b>			<b>30,000</b>	<b>Gain on Sale</b>			<b>25,000</b>	
30	<b>Tax Rate</b>			<b>0.15</b>	<b>Tax Rate</b>			<b>0.15</b>	
31	<b>Tax Due</b>			<b>4,500</b>	<b>Tax Due</b>			<b>3,750</b>	

Table 8: Depreciation Computations (Continued)

	K	L	M	N	O	P	Q	R	S	
1	MACRS 5 Year				39 Year Real Estate					
2										
3	<u>Depreciation Taken</u>				<u>Depreciation Taken</u>					
4										
5	Year	Percentage	Cost	Depreciation	Year	Percentage	Cost	Depreciation		
6	0				0					
7	1	0.2	60,000	12,000	1	0.025641	100,000	2,564		
8	2	0.32	60,000	19,200	2	0.025641	100,000	2,564		
9	3	0.19	60,000	11,400	3	0.025641	100,000	2,564		
10	4	0.12	60,000	7,200	4	0.025641	100,000	2,564		
11	5	0.11	60,000	6,600	5	0.025641	100,000	2,564		
12										
13	Total Depreciation Taken			56,400	Total Depreciation Taken			12,821		
14										
15	<u>Book Value</u>				<u>Book Value</u>					
16										
17	Cost of Machine			60,000	Cost of Machine			100,000		
18	Less Depreciation Taken			56,400	Less Depreciation Taken			12,821		
19	= Book Value			3,600	= Book Value			87,180		
20										
21	<u>Gain on Sale</u>				<u>Gain on Sale</u>					
22										
23	Sales Price			50,000	Sales Price			90,000		
24	Less Book Value			3,600	Less Book Value			87,180		
25	= Gain on Sale			46,400	= Gain on Sale			2,821		
26										
27	<u>Tax on Gain</u>				<u>Tax on Gain</u>					
28										
29	Gain on Sale			46,400	Gain on Sale			2,821		
30	Tax Rate			0.15	Tax Rate			0.15		
31	Tax Due			6,960	Tax Due			423		

Table 10 shows cost of capital information and calculations that appear in Worksheet ‘CC’. These cost of capital calculations enhance previous versions which required users to manually estimate capital costs. Revisions to this procedure represent one of two primary contributions of the current paper. Users rank the risk of their firm from 1-10 and enter the value in Worksheet ‘S1’ Cell C7. Table 1 provides some guidelines to make the determination. With this estimate the template selects a cost of funds amount from a list provided in worksheet ‘CC’ cells A-C 42-53. Distributors of the template should update these rates as market conditions change. Advanced users may use the specific fund cost information provided to override the automated calculations. Provided historical data from Ibbotson and Sinquefeld (2019) and current data from other sources may prove useful in this process.

Table 11 shows data regarding current tax rates presented in Worksheet ‘Tax’. The table contains tax information for four filing statuses. The table includes standard deduction levels, ordinary and capital gains tax rates, corporate tax rates, and the new qualified business income (QBI) deduction rate. Information from the ‘Tax’ worksheet feeds into a new worksheet ‘TaxC’. The ‘TaxC’ worksheet formally estimates taxes due based on user entered information. The calculations represent a rough estimate only. Given U.S. tax code complexity, precise tax estimates exceed the template’s capabilities. Users requiring more precise estimates should consult a tax professional or utilize a tax preparation tool such as Quickbooks.

Table 8F: Depreciation Computations (Formulae Display)

	A	B	C	D	E	F	G	H	I
1	MACRS 3 Year					SL 5 Year			
2									
3	<u>Dep. Taken</u>					<u>Dep. Taken</u>			
4									
5	Year	Percent	Cost	Depreciation		Year	Percent	Cost	Depreciation
6	0					0			
7	1	0.33	=S1!\$B\$87	=B7*C7		1	0.2	=S1!\$B\$89	=G7*H7
8	2	0.45	=S1!\$B\$87	=B8*C8		2	0.2	=S1!\$B\$89	=G8*H8
9	3	0.15	=S1!\$B\$87	=B9*C9		3	0.2	=S1!\$B\$89	=G9*H9
10	4	0.07	=S1!\$B\$87	=B10*C10		4	0.2	=S1!\$B\$89	=G10*H10
11	5	0	=S1!\$B\$87	=B11*C11		5	0.2	=S1!\$B\$89	=G11*H11
12									
13	Total Dep. Taken			=SUM(D7:D11)		Total Dep. Taken			=SUM(I7:I11)
14									
15	<u>Book Value</u>					<u>Book Value</u>			
16									
17	Cost of Machine			=C7		Cost of Machine			=H7
18	Less Dep. Taken			=D13		Less Dep. Taken			=I13
19	= Book Value			=D17-D18		= Book Value			=I17-I18
20									
21	<u>Gain on Sale</u>					<u>Gain on Sale</u>			
22									
23	Sales Price			=S1!G173		Sales Price			=S1!G174
24	Less Book Value			=D19		Less Book Value			=I19
25	= Gain on Sale			=D23-D24		= Gain on Sale			=I23-I24
26									
27	<u>Tax on Gain</u>					<u>Tax on Gain</u>			
28									
29	Gain on Sale			=D25		Gain on Sale			=I25
30	Tax Rate			=TaxC!\$B\$79		Tax Rate			=TaxC!\$B\$79
31	Tax Due			=D29*D30		Tax Due			=I29*I30

Table 8F: Depreciation Computations (Formulae Display) (Continued)

	K	L	M	N	O	P	Q	R	S
1	MACRS 5 Yr					39 Year Real Esta			
2									
3	<b>Dep. Taken</b>					<b>Dep. Taken</b>			
4									
5	Year	Percent Cost	Depreciation	Year	Percent Cost	Depreciation			
6	0			0					
7	1	0.2	=S1!\$B\$91 =L7*M7	1	0.025641	=S1!\$B\$93 =Q7*R7			
8	2	0.32	=S1!\$B\$91 =L8*M8	2	0.025641	=S1!\$B\$93 =Q8*R8			
9	3	0.19	=S1!\$B\$91 =L9*M9	3	0.025641	=S1!\$B\$93 =Q9*R9			
10	4	0.12	=S1!\$B\$91 =L10*M10	4	0.025641	=S1!\$B\$93 =Q10*R10			
11	5	0.11	=S1!\$B\$91 =L11*M11	5	0.025641	=S1!\$B\$93 =Q11*R11			
12									
13	Total Dep. Taken		=SUM(N7:N11)	Total Dep. Taken		=SUM(S7:S11)			
14									
15	<b>Book Value</b>					<b>Book Value</b>			
16									
17	Cost of Machine		=M7	Cost of Machine		=R7			
18	Less Dep. Taken		=N13	Less Dep. Taken		=S13			
19	= Book Value		=N17-N18	= Book Value		=S17-S18			
20									
21	<b>Gain on Sale</b>					<b>Gain on Sale</b>			
22									
23	Sales Price		=S1!G175	Sales Price		=S1!G176			
24	Less Book Value		=N19	Less Book Value		=S19			
25	= Gain on Sale		=N23-N24	= Gain on Sale		=S23-S24			
26									
27	<b>Tax on Gain</b>					<b>Tax on Gain</b>			
28									
29	Gain on Sale		=N25	Gain on Sale		=S25			
30	Tax Rate		=TaxC!\$B\$79	Tax Rate		=TaxC!\$B\$79			
31	Tax Due		=N29*N30	Tax Due		=S29*S30			

This table shows formulae for depreciation calculations. Worksheet 'S1' contains all calculations except depreciation and tax. Worksheet 'DP' contains depreciation computations. Worksheet 'TaxC' contains tax calculations. The spreadsheet calculates all items without user intervention.

Table 9: Error Messages

	A
1	<b>ERROR! Your beginning balance sheet entries do not conform to the basic accounting relationship Assets = Liabilities + Equity. Please adjust your entries to comply with this requirement.</b>
2	
3	<b>ERROR! This entry is not valid. A non zero entry in this cell indicates you are selling something that you did not purchase. Either record the purchase of this item on the Year 0 balance sheet or remove the entry from this cell.</b>
4	<b>ERROR! This entry is not valid. A non zero entry in this cell indicates you are selling something that you did not purchase. Either record the purchase of this item statement as a section 179 purchase on your income statement or remove the entry from this cell.</b>
5	<b>ERROR! The common stock value is not valid. Common stock must be entered as a positive value.</b>

This table shows worksheet 'EM' which contains messages displayed in other areas of the spreadsheet.

Table 10: Cost of Funds Determination

	A	B	C	D	E	F	G
1	<b>CALCULATION OF AVERAGE INTEREST RATE ON LOANS AND COST OF EQUITY</b>						
2							
3	<b><u>Cost of Equity Information</u></b>						
4							
5	<i>Average Return on financial instruments from 1926-2015</i>						
6							
7	Small Stocks				12.00%		
8	Large Stocks				10.00%		
9	Government Bonds				5.60%		
10	Treasury Bills				3.40%		
11	Inflation				2.90%		
12	Source Ibbotson and Sinquefeld: Stocks, Bonds, Bills and Inflation, (SBBI) Yearbook						
13							
14	<b><u>Loan Cost Information</u></b>						
15							
16	<i>Interest Rate Data (July 21, 2020)</i>						
17							
18	Prime rate of interest				3.25%		
19	Source FedPrimeRate.com						
20							
21	July 21, 2020, 1-year Treasury Bill Rate				0.15%		
22	July 21, 2020 Current 10-year Treasury Bond				1.14%		
23	Source: U.S. Department of the Trasury Resource Center						
24							
25	<i>Small Business Administration Loans (December 2, 2019)</i>						
26							
27	For Loans exceeding \$50,000 and repayment in less than 7 years.						5.50%
28	For Loans exceeding \$50,000 and repayment in more than 7 years.						6.00%
29							
30	<i>Other rates (July 21, 2020)</i>						
31							
32	Typical Credit Card Rates						15.00%
33	Typical 15-year Mortgage Rates						3.03%
34	Typical 30-year Mortgage Rates						3.42%
35	Typical Personal Loans Rate						6.00%
36	Source: Bankrate.com						
37							
38	Typical Automobile Loan Rates						2.69%
39	Source: BankofAmerica.com						
40							
41							
42	<b>COST OF EQUITY APPROXIMATION</b>						
43	Risk	Equity	Debt				
44	1	8.00%	4.00%				
45	2	10.00%	6.00%				
46	3	12.00%	8.00%				
47	4	14.00%	10.00%				
48	5	16.00%	12.00%				
49	6	20.00%	16.00%				
50	7	24.00%	20.00%				
51	8	30.00%	25.00%				
52	9	40.00%	35.00%				
53	10	50.00%	45.00%				
54							
55	<b>CALCULATED COST OF FUNDS</b>						
56							
57	Average Interest Rate on Loans				6.000%		
58	Cost of Equity				10.000%		

This table shows the 'CC' worksheet. The worksheet calculates loan rates and cost of capital rates.

Table 10F: Cost of Funds Determination (Formulae)

	A	B	C	D	E	F	G
1	<b>CALC. OF AVG LOAN RATE &amp; COST OF CAP</b>						
2							
3	<b><u>Cost of Equity Information</u></b>						
4							
5	<i>Average Return on financial instruments from 1926-2015</i>						
6							
7	Small Stocks				0.12		
8	Large Stocks				0.1		
9	Government Bonds				0.056		
10	Treasury Bills				0.034		
11	Inflation				0.029		
12	Source I&S: Stocks, (SBBI) Yearbook						
13							
14	<b><u>Loan Cost Information</u></b>						
15							
16	<i>Interest Rate Data (July 21, 2020)</i>						
17							
18	Prime rate of interest				0.0325		
19	Source FedPrimeRate.com						
20							
21	July 21, 2020, 1-year Treasury Bill Rate				0.0015		
22	July 21, 2020 Current 10-year Treasury Bond				0.0114		
23	Source: U.S.D.T. Resource Center						
24							
25	<i>Small Business Administration Loans (December 2, 2019)</i>						
26							
27	For Loans > \$50,000 + and repay < 7 years.					0.055	
28	For Loans > \$50,000 and repay > 7 years.					0.06	
29							
30	<i>Other rates (July 21, 2020)</i>						
31							
32	Typical Credit Card Rates					0.15	
33	Typical 15-year Mortgage Rates					0.0303	
34	Typical 30-year Mortgage Rates					0.0342	
35	Typical Personal Loans Rate					0.06	
36	Source: Bankrate.com						
37							
38	Typical Automobile Loan Rates					0.0269	
39	Source: BankofAmerica.com						
40							
41							
42	<b>COST OF EQUITY APPROX</b>						
43		Equity	Debt				
44	1	0.08	0.04				
45	2	0.1	0.06				
46	3	0.12	0.08				
47	4	0.14	0.1				
48	5	0.16	0.12				
49	6	0.2	0.16				
50	7	0.24	0.2				
51	8	0.3	0.25				
52	9	0.4	0.35				
53	10	0.5	0.45				
54							
55	<b>CALCULATED COST OF FUNDS</b>						
56							
57	Average Interest Rate on Loans				*83		
58	Cost of Equity				*84		

This table show the formula for cost of capital calculations. \*83 =VLOOKUP("S1"1B7,CC!A44:C53,3), \*84 =VLOOKUP("S1"1B7,CC!A44:C53,2).

Table 11: Tax Rate Information

	A	B	C	D	E	F
1	<b>TAX RATES FOR 2020 TAX YEAR</b>					
2						
3	<i>Standard Deduction Amounts</i>					
4						
5	Single			\$12,400		
6	Married Filing Jointly and Surviving Spouses			\$24,800		
7	Married Filing Separately			\$12,400		
8	Head of Household			\$18,650		
9						
10	<i>Maximum Capital Gains Rates</i>			Max At	Max at	Excess
11				0% Rate	15 % Rate	Rate
12	Single			\$40,000	\$441,450	20%
13	Married Filing Jointly and Surviving Spouses			\$80,000	\$496,600	20%
14	Married Filing Separately			\$40,000	\$248,300	20%
15	Head of Household			\$53,600	\$469,050	20%
16				0.00	0.15	0.20
17						
18	<i>Corporate Tax Rates</i>	21% on all corporate income				
19	<i>Qualified Business Income Deduction Rate</i>	20%				
20						
21	<i>Ordinary Income Tax Rates</i>					
22						
23	Single					
24	Base of Range	Top of Range	Base Tax	Tax Rate on Income over Base		
25	\$0.00	\$9,875.00	\$0.00	10%		
26	\$9,876.00	\$40,125.00	\$987.50	12%		
27	\$40,126.00	\$85,525.00	\$4,617.50	22%		
28	\$85,526.00	\$163,300.00	\$14,605.50	24%		
29	\$163,301.00	\$207,350.00	\$33,271.50	32%		
30	\$207,351.00	\$518,400.00	\$47,367.50	35%		
31	\$518,401.00		\$156,235.00	37%		
32						
33	Married Filing Joint Returns and Surviving Spouse					
34	Base of Range	Top of Range	Base Tax	Tax Rate on Income over Base		
35	\$0.00	\$19,750.00	\$0.00	10%		
36	\$19,751.00	\$80,250.00	\$1,975.00	12%		
37	\$80,251.00	\$171,050.00	\$9,235.00	22%		
38	\$171,051.00	\$326,600.00	\$29,211.00	24%		
39	\$326,601.00	\$414,700.00	\$66,543.00	32%		
40	\$414,701.00	\$622,050.00	\$94,735.00	35%		
41	\$622,051.00		\$167,307.50	37%		
42						
43	Married Filing Separately					
44	Base of Range	Top of Range	Base Tax	Tax Rate on Income over Base		
45	\$0.00	\$9,875.00	\$0.00	10%		
46	\$9,876.00	\$40,125.00	\$987.50	12%		
47	\$40,126.00	\$85,525.00	\$4,617.50	22%		
48	\$85,526.00	\$163,300.00	\$14,605.50	24%		
49	\$163,301.00	\$207,350.00	\$33,271.50	32%		
50	\$207,351.00	\$311,025.00	\$47,367.50	35%		
51	\$311,026.00		\$83,653.75	37%		
52						
53	Head of Household					
54	Base of Range	Top of Range	Base Tax	Tax Rate on Income over Base		
55	\$0.00	\$14,100.00	\$0.00	10%		
56	\$14,101.00	\$53,700.00	\$1,410.00	12%		
57	\$53,701.00	\$85,500.00	\$6,162.00	22%		
58	\$85,501.00	\$163,300.00	\$13,158.00	24%		
59	\$163,301.00	\$207,350.00	\$33,830.00	32%		
60	\$207,351.00	\$518,400.00	\$45,926.00	35%		
61	\$518,401.00		\$154,793.50	37%		

This table provides information on current tax rates.

Table 12 (Table 12F) shows the 'TaxC' worksheet which automates tax calculations for the analysis. This procedure represents the second major contribution of the analysis here. Recall that users enter marital status, non-business ordinary income and non-business capital gains income in the input section of Worksheet 'S1'. Users also provide an estimate of the state tax liability relative to the federal tax liability. This information combines with taxable business income calculated in Worksheet 'S1', and current tax rates provided in Worksheet 'Tax' to produce formal tax estimates. The estimates consider both Federal and State tax liabilities, filing status, differential tax rates between ordinary income and taxable gains, standard deductions, and qualified business income deductions. Worksheet 'S1', 'DP' and 'CC' incorporate the resulting values as necessary throughout the analysis. In addition, Worksheet 'TaxC' provides average tax rate estimates used in valuation estimates. The notes to Table 12F provide only selected formulas due to the complexity of the calculations. The full formula list is available from the author on request.

The 'TaxC' worksheet begins by summarizing taxable income information reported in Worksheet 'S1'. Next, the worksheet totals income from business and personal sources and categorizes it as capital gains or ordinary income. The deductions section reports the standard deduction amount for each filing status. The total taxable income section reduces the total income by the standard deduction for each filing status. Next, the taxable income is re-segregated into ordinary and capital gains components. The total ordinary taxable income section reflects that portion of income subject to ordinary tax rates. The capital gains tax rate section indicates the applicable tax rate on capital gains. The worksheet identifies the appropriate capital gains rate based on reported total taxable income. The tax on capital gains section calculates the amount of tax due on reported capital gains income.

The calculations next calculate tax due on ordinary income. To simplify formula development, I used two calculation steps. The first element involves identifying the base tax on ordinary income. The tax on ordinary income section completes the calculations of ordinary income tax due. The worksheet continues with calculations of State taxes. Finally, total tax due is calculated equals the sum of Federal capital gains and ordinary income taxes plus State taxes.

The tax amounts due include both business and personal income. However, aside from serving as a component in calculating tax rates, tax on personal income is irrelevant to the analysis. For this reason, the next calculation shows the business portion of taxes. Using this proportion, the worksheet calculates total tax attributable to business operations. The average tax rates reported in rows 77-81 provide a foundation for business valuation formulas on Worksheet 'S1'. Lastly, the worksheet shows detailed calculations of capital gains taxes due on the sale of individual capital assets.

Table 12: Tax Calculations

	A	B	C	D	E	F	G
1	<b>TAXABLE INCOME SUMMARY</b>						
2							
3	<b>YR</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
4	Ordinary Business Income	49,801	73,191	54,723	80,301	218,585	
5	Qualified Business Income Ded.	10,458	15,370	11,492	16,863	45,903	
6	Taxable Business Income	39,343	57,821	43,231	63,438	172,682	
7	Long Term Bus. Capital Gains					149,221	
8	Personal Ordinary Income	50,000	50,000	50,000	50,000	50,000	
9	Long Term Pers. Capital Gains	50000	50000	50000	50000	50000	
10							
11	<b>TOTAL ORDINARY INCOME</b>	<b>89,343</b>	<b>107,821</b>	<b>93,231</b>	<b>113,438</b>	<b>222,682</b>	
12	Total L.T. Capital Gains Income	50,000	50,000	50,000	50,000	199,221	
13	<b>Total Income</b>	<b>139,343</b>	<b>157,821</b>	<b>143,231</b>	<b>163,438</b>	<b>421,903</b>	
14							
15	<b>DEDUCTIONS</b>						
16	Single	12400	12,400	12,400	12,400	12,400	
17	Married Fil. Joint & Sur. Spouse	24800	24,800	24,800	24,800	24,800	
18	Married Filing Separately	12400	12,400	12,400	12,400	12,400	
19	Head of Household	18650	18,650	18,650	18,650	18,650	
20							
21	<b>TOTAL TAXABLE INCOME</b>						
22	Single	126,943	145,421	130,831	151,038	409,503	
23	Married Fil. Joint & Sur. Spouse	114,543	133,021	118,431	138,638	397,103	
24	Married Filing Separately	126,943	145,421	130,831	151,038	409,503	
25	Head of Household	120,693	139,171	124,581	144,788	403,253	
26							
27	<b>TOTAL ORDINARY TAXABLE INCOME</b>						
28	Single	76,943	95,421	80,831	101,038	210,282	
29	Married Fil. Joint & Sur. Spouse	64,543	83,021	68,431	88,638	197,882	
30	Married Filing Separately	76,943	95,421	80,831	101,038	210,282	
31	Head of Household	70,693	89,171	74,581	94,788	204,032	
32							
33	<b>Capital Gains Tax Rate</b>						
34	Single	0.15	0.15	0.15	0.15	0.15	
35	Married Fil. Joint & Sur. Spouse	0.15	0.15	0.15	0.15	0.15	
36	Married Filing Separately	0.15	0.15	0.15	0.15	0.20	
37	Head of Household	0.15	0.15	0.15	0.15	0.15	
38							
39	<b>TAX ON CAPITAL GAINS</b>						
40	Single	7,500	7,500	7,500	7,500	29,883	
41	Married Fil. Joint & Sur. Spouse	7,500	7,500	7,500	7,500	29,883	
42	Married Filing Separately	7,500	7,500	7,500	7,500	39,844	
43	Head of Household	7,500	7,500	7,500	7,500	29,883	
44							
45	<b>BASE TAX ON ORDINARY INCOME</b>						
46	Single	4,618	14,606	4,618	14,606	47,368	
47	Married Fil. Joint & Sur. Spouse	1,975	9,235	1,975	9,235	29,211	
48	Married Filing Separately	4,618	14,606	4,618	14,606	47,368	
49	Head of Household	6,162	13,158	6,162	13,158	33,830	
50							
51	<b>TAX ON ORDINARY INCOME</b>						
52	Single	12,717	16,980	13,573	18,328	48,393	
53	Married Fil. Joint & Sur. Spouse	7,350	9,844	7,817	11,080	35,650	
54	Married Filing Separately	12,717	16,980	13,573	18,328	48,393	
55	Head of Household	9,900	14,039	10,756	15,387	46,864	

Table 12: Tax Calculations Continued

	A	B	C	D	E	F	G
57	<b>STATE TAX</b>						
58	Single	4,334	7,896	4,548	8,233	23,940	
59	Married Fil. Joint & Sur. Spouse	2,331	4,770	2,448	5,079	16,215	
60	Married Filing Separately	4,334	7,896	4,548	8,233	23,940	
61	Head of Household	4,016	6,799	4,229	7,136	20,173	
62							
63	<b>TOTAL TAX DUE</b>						
64	Single	21,668	39,482	22,738	41,167	119,701	
65	Married Fil. Joint & Sur. Spouse	11,656	23,849	12,239	25,394	81,077	
66	Married Filing Separately	21,668	39,482	22,738	41,167	119,701	
67	Head of Household	20,078	33,996	21,147	35,681	100,867	
68							
69	<b>BUSINESS PORTION OF TAX DUE</b>	0.282	0.366	0.302	0.388	0.763	
70							
71	<b>TOTAL TAX DUE RELATED TO BUSINESS</b>						
72	Single	6,118	14,465	6,863	15,979	91,329	
73	Married Fil. Joint & Sur. Spouse	3,291	8,738	3,694	9,857	61,860	
74	Married Filing Separately	6,118	14,465	6,863	15,979	91,329	
75	Head of Household	5,669	12,455	6,383	13,849	76,960	
76							
77	<b>CALCULATED AVERAGE TAX RATES FOR VALUATION</b>						
78							
79	Tax Rate on Capital Gains (TPS)	15.000%	15.000%	15.000%	15.000%	15.000%	
80	Tax Rate on Ordinary Income (TPB)	16.528%	17.795%	16.791%	18.140%	23.014%	
81	Corporate Tax Rate (TC)	21.000%	21.000%	21.000%	21.000%	21.000%	
82							
83	<b>YR 5 CAPITAL GAINS</b>						
84							
85			Sales Price	Basis	Gain	Tax Rate	Tax Due
86	Inventory		10,000	10,000	0	0.15	0
87	Deposits		53,000	53,000	0	0.15	0
88	Asset 4		0	0	0	0.15	0
89	Asset 5		0	0	0	0.15	0
90	Asset 6		0	0	0	0.15	0
91	Asset 7		0	0	0	0.15	0
92	Sale of 179 Expense Election Assets		20,000	0	20,000	0.15	3,000
93	Non Depreciable LT Assets (Land)		150,000	100,000	50,000	0.15	7,500
94	Long Term Asset MACRS 3YR		30,000	0	30,000	0.15	4,500
95	Long Term Asset SL 5YR		25,000	0	25,000	0.15	3,750
96	Long Term Asset MACRS 5YR		25,000	3,600	21,400	0.15	3,210
97	Real Estate 39 Years		90,000	87,180	2,821	0.15	423
98	<b>Total Business Capital Gains</b>				149,221	0.15	22,383
99	<b>Personal Capital Gain</b>				50,000	0.15	7,500
100	<b>Total Capital Gain</b>				199,221	0.15	29,883

*This table shows calculation of taxes due and relevant tax rates.*

Table 12F: Tax Calculations (Formulae)

	A	B	C	D	E	F
1	<b>TAXABLE INCOME SUMMARY</b>					
2						
3	<b>YR</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
4	Ordinary Business Income	=S1!C34	=S1!D34	=S1!E34	=S1!F34	=S1!G34
5	Qualified Business Income Ded.	=B4*Tax!\$C\$18	=C4*Tax!\$C\$18	=D4*Tax!\$C\$18	=E4*Tax!\$C\$18	=F4*Tax!\$C\$18
6	Taxable Business Income	=B4-B5	=C4-C5	=D4-D5	=E4-E5	=F4-F5
7	Long Term Bus. Capital Gains					=E98
8	Personal Ordinary Income	=S1!C9	=S1!D9	=S1!E9	=S1!F9	=S1!G9
9	Long Term Pers. Capital Gains	=S1!C9	=S1!D9	=S1!E9	=S1!F9	=S1!G9
10						
11	<b>TOTAL ORDINARY INCOME</b>	=B6+B8	=C6+C8	=D6+D8	=E6+E8	=F6+F8
12	Total L.T. Capital Gains Income	=SUM(B7+B9)	=SUM(C7+C9)	=SUM(D7+D9)	=SUM(E7+E9)	=SUM(F7+F9)
13	Total Income	=B11+B12	=C11+C12	=D11+D12	=E11+E12	=F11+F12
14						
15	<b>DEDUCTIONS</b>					
16	Single	=Tax!D5	=B16	=C16	=D16	=E16
17	Married Fil. Joint & Sur. Spouse	=Tax!D6	=B17	=C17	=D17	=E17
18	Married Filing Separately	=Tax!D7	=B18	=C18	=D18	=E18
19	Head of Household	=Tax!D8	=B19	=C19	=D19	=E19
20						
21	<b>TOTAL TAXABLE INCOME</b>					
22	Single	=B13-B16	=C13-C16	=D13-D16	=E13-E16	=F13-F16
23	Married Fil. Joint & Sur. Spouse	=B13-B17	=C13-C17	=D13-D17	=E13-E17	=F13-F17
24	Married Filing Separately	=B13-B18	=C13-C18	=D13-D18	=E13-E18	=F13-F18
25	Head of Household	=B13-B19	=C13-C19	=D13-D19	=E13-E19	=F13-F19
26						
27	<b>TOTAL ORDINARY TAXABLE INCOME</b>					
28	Single	=B\$11-B16	=C\$11-C16	=D\$11-D16	=E\$11-E16	=F\$11-F16
29	Married Fil. Joint & Sur. Spouse	=B\$11-B17	=C\$11-C17	=D\$11-D17	=E\$11-E17	=F\$11-F17
30	Married Filing Separately	=B\$11-B18	=C\$11-C18	=D\$11-D18	=E\$11-E18	=F\$11-F18
31	Head of Household	=B\$11-B19	=C\$11-C19	=D\$11-D19	=E\$11-E19	=F\$11-F19
32						
33	<b>Capital Gains Tax Rate</b>					
34	Single	*85	*86	*87	*88	*89
35	Married Fil. Joint & Sur. Spouse	*90	*91	*92	*93	*94
36	Married Filing Separately	*95	*96	*97	*98	*99
37	Head of Household	*100	*101	*102	*103	*104
38						
39	<b>TAX ON CAPITAL GAINS</b>					
40	Single	=B34*B\$12	=C34*C\$12	=D34*D\$12	=E34*E\$12	=F34*F\$12
41	Married Fil. Joint & Sur. Spouse	=B35*B\$12	=C35*C\$12	=D35*D\$12	=E35*E\$12	=F35*F\$12
42	Married Filing Separately	=B36*B\$12	=C36*C\$12	=D36*D\$12	=E36*E\$12	=F36*F\$12
43	Head of Household	=B37*B\$12	=C37*C\$12	=D37*D\$12	=E37*E\$12	=F37*F\$12
44						
45	<b>BASE TAX ON ORDINARY INCOME</b>					
46	Single	*105	*106	*107	*108	*109
47	Married Fil. Joint & Sur. Spouse	*110	*111	*112	*113	*114
48	Married Filing Separately	*115	*116	*117	*118	*119
49	Head of Household	*120	*121	*122	*123	*124
50						
51	<b>TAX ON ORDINARY INCOME</b>					
52	Single	*125	*126	*127	*128	*129
53	Married Fil. Joint & Sur. Spouse	*130	*131	*132	*133	*134
54	Married Filing Separately	*135	*136	*137	*138	*139
55	Head of Household	*140	*141	*142	*143	*144

Table 12F: Tax Calculations (Formulae) (Continued)

	A	B	C	D	E	F	G
57	STATE TAX						
58	Single	*145	*146	*147	*148	*149	
59	Mar. Fil. Jnt & Sur. Sp.	*150	*151	*152	*153	*154	
60	Married Filing Separately	*155	*156	*157	*158	*159	
61	Head of Household	*160	*161	*162	*163	*164	
62							
63	TOTAL TAX DUE						
64	Single	*165	*166	*167	*168	*169	
65	Mar. Fil. Jnt & Sur. Sp.	*170	*171	*172	*173	*174	
66	Married Filing Separately	*175	*176	*177	*178	*179	
67	Head of Household	*180	*181	*182	*183	*184	
68							
69	BUS PORTION OF TAX DU	= (B6+B7)/B13	= (C6+C7)/C13	= (D6+D7)/D13	= (E6+E7)/E13	= (F6+F7)/F13	
70							
71	TOTAL TAX REL TO BUS						
72	Single	=B64*B\$69	=C64*C\$69	=D64*D\$69	=E64*E\$69	=F64*F\$69	
73	Mar. Fil. Jnt. & Sur. Sp.	=B65*B\$69	=C65*C\$69	=D65*D\$69	=E65*E\$69	=F65*F\$69	
74	Married Filing Sep.	=B66*B\$69	=C66*C\$69	=D66*D\$69	=E66*E\$69	=F66*F\$69	
75	Head of Household	=B67*B\$69	=C67*C\$69	=D67*D\$69	=E67*E\$69	=F67*F\$69	
76							
77	CALC AVG TAX RATES						
78							
79	Tax Rate on Cap. G.(TPS)	*185	*186	*187	*188	*189	
80	Tax Rate on Ord Inc (TPB)	*190	*191	*192	*193	*194	
81	Corporate Tax Rate (TC)	=Tax!C18	=B81	=C81	=D81	=E81	
82							
83	YR 5 CAPITAL GAINS						
84							
85			Sales Price	Basis	Gain	Tax Rate	Tax Due
86	=S1!A165		=S1!G165	=S1!B150	=C86-D86	*195	=E86*F86
87	=S1!A166		=S1!G166	=S1!B151	=C87-D87	*196	=E87*F87
88	=S1!A167		=S1!G167	=S1!B152	=C88-D88	*197	=E88*F88
89	=S1!A168		=S1!G168	=S1!B153	=C89-D89	*198	=E89*F89
90	=S1!A169		=S1!G169	=S1!B154	=C90-D90	*199	=E90*F90
91	=S1!A170		=S1!G170	=S1!B155	=C91-D91	*200	=E91*F91
92	Sale of 179		=S1!G171	0	=C92-D92	*201	=E92*F92
93	Non Dep LT Assets (Land)		=S1!G172	=S1!B157	=C93-D93	*202	=E93*F93
94	L.T. Asset MACRS 3YR		=S1!G173	0	=C94-D94	*203	=E94*F94
95	L.T. Asset SL 5YR		=S1!G174	0	=C95-D95	*204	=E95*F95
96	L.T. Asset MACRS 5YR		=S1!G174	=DP!N19	=C96-D96	*205	=E96*F96
97	Real Estate 39 Years		=S1!G176	=DP!S19	=C97-D97	*206	=E97*F97
98	Total Bus Cap Gains				=SUM(E86:E97)	*207	=E98*F98
99	Personal Capital Gain				=F9	*208	=E99*F99
100	Total Capital Gain				=E98+E99	*209	=E100*F100

This table shows tax calculations formulae.

\*85=IF(B22<=Tax!\$D\$12,Tax!\$D\$16,IF(AND(B22>Tax!\$D\$12,B22<=Tax!\$E\$12),Tax!\$E\$16,Tax!\$F\$16)),

\*105=IF(AND(B28>=Tax!\$A\$25,B28<=Tax!\$B\$25),Tax!\$C\$25,IF(AND(B28>=Tax!\$A\$26,B28<=Tax!\$B\$26),Tax!\$C\$26,IF(AND(B28>=Tax!\$A\$27,B28<=Tax!\$B\$27),Tax!\$C\$27,IF(AND(B28>=Tax!\$A\$28,B28<=Tax!\$B\$28),Tax!\$C\$28,IF(AND(B28>=Tax!\$A\$29,B28<=Tax!\$B\$29),Tax!\$C\$29,IF(AND(B28>=Tax!\$A\$30,B28<=Tax!\$B\$30),Tax!\$C\$30,IF(B28>=Tax!\$A\$31,Tax!\$C\$31,ERROR)))))),

\*145 =SUM(B46+B52)\*S1!\$B\$3, \*165 =SUM(B46+B52+B58),

\*185 =IF(S1!\$B\$6=1,TaxC!B34,IF(S1!\$B\$6=2,TaxC!B35,IF(S1!\$B\$6=3,TaxC!B36,IF(S1!\$B\$6=4,TaxC!B37))),

\*195 =IF(S1!\$B\$6=1,TaxC!\$F\$34,IF(S1!\$B\$6=2,TaxC!\$F\$35,IF(S1!\$B\$6=3,TaxC!\$F\$36,IF(S1!\$B\$6=4,TaxC!\$F\$37))).

### CONCLUDING COMMENTS

This paper provides enhancements to a tool for creating comprehensive pro-forma financial statements. The template simplifies statement creation and assures completeness and computational correctness. Moreover, the template does not require plug figures and does not create circular references. Users enter

values for managerial-determined variables. With this information the template completes necessary computations and produces completed financial statements. When users adjust managerial-determined values in the spreadsheet, the template updates all other values to reflect the change without further user intervention and while maintaining statement integrity. Error messages instruct the user to correct unfeasible entries.

The template improves upon the work of Jalbert (2017) and Jalbert (2019). However, the template here is not suitable for all situations. International users facing non-U.S. tax systems should use the Jalbert (2019) template. The valuations equations reported here assume constant earnings. Further research might incorporate earnings growth in the valuation estimates. The current worksheet assumes the sale of all capital equipment upon close of the fifth year of operations. Improvements to the template might include more sophisticated depreciation options that allow for premature property sales. Finally, the template produces only annual analysis. Future development might enhance the template to accommodate monthly analysis. Interested readers may contact the author to obtain an electronic copy of the template.

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